The Orchadian

Volume 19, Number 11 March 2020

Official Journal of the Australasian Native Orchid Society Inc.

Caladenia saggicola Tasmania Photo Peter Fehre

The Orchadian

Official Journal of the Australasian Native Orchid Society Inc. Founded 1963

www.anos.org.au

Dedicated to the study and conservation of Australasian native orchids

Print Post Approved: 100000950, ISSN 04774-3342

Patron: David Cannon

March 2020 Volume 19 Number 11

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Please include your contact information for communication and publication.

Editorial Guidelines, including instructions for authors, are available on the ANOS website.

The Orchadian is printed by Immij Pty Ltd, Mount Waverley Victoria 3149

Subscription Rates (in $AU)
1/7/20 - 30/6/21

Australia	**$55**
New Zealand	**$65**
Asia/Pacific	**$70**
Rest of World	**$80**

Subs will be due from 1 July 2020

Advertising Costs per Four Issues, June - March

1/6 page	$120
1/4 page	$160
1/2 page	$300

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19th DENDROBIUM SPECIOSUM SPECTACULAR & AUSTRALASIAN ORCHID SPECIES and HYBRID SHOW (2020)

Kempsey, NSW

(Ted & Winsome Walmsley and ANOS Mid North Coast Group)

Dates for this event which provides a first class opportunity to see some of the best speciosums in flower as well as a wide range of other Australasian orchids and hybrids, are given below. Note the dates and plan to be there as **this will be the final such show**. All are welcome to exhibit and judging will be by an all ANOS panel. Monetary prizes and trophies will be awarded in a range of classes including species, hybrids and terrestrials.

Interstate entries are encouraged with a prize for the most travelled orchid.

Dates: **Sat 5th Sept 10am to 4pm** [Closed for judging b/w 11am and 12 noon this day]
Sun 6th Sept 9am to 2pm

Location: **Kempsey Dirt Bike Track, Alverton St., Greenhill, via Kempsey.**

Details: **Refer to the website:** www.kempseyspeciosumspectacular.com.au
OR contact Ted Walmsley on (02) 6562-7150 or John Zietsch on (02) 6554-9733.

Dendrobium kingianum 'Corrigan's Red' Photo P. Adams

Conservation is a regular topic in *The Orchadian*, with contributions from Tasmania, Victoria and Western Australia in recent issues. Neil Anderton presents the conservation activities of Victorian ANOS Group in this issue. Dry seasons, hotter summers and more intense and widespread fire present a formidable challenge for orchids and conservation, and we await the assessment of recent damage and proposals for future management. I invite material from New South Wales and Queensland, where habitat destruction by development and natural disasters are ongoing.

Recognising the work of Australian orchid breeders is a subject of interest. In recent years it has been rare for an editor to receive detailed accounts of breeding approaches, experiences and results from breeders. The first step in recognition is to document what has been done in developing new hybrids, for commercial reasons and for the orchid fraternity. It is best for breeders to write of their own experiences, rather than others who were not present at the time. However, the next best is to request contributions from older members with knowledge of past significant breeders who are no longer with us. An exception is David Butler, who is notable for recording his results in *The Orchadian*. He has another article on *Sarcochilus* and climate in this issue.

It is worth noting that the microscopic initiation of flowering meristems in most common Australian genera occurs much earlier than growers realise, sometime in the summer growth period. The recently recorded warmer autumn temperatures are not the prime reason for observed poorer flowering years, as flower initiation occurs before this time.

I record some of my own breeding experience over three decades, on breeding of *Dendrobium kingianum*-style hybrids (Yarra series), with successes and failures to assist others who follow. We can consider hybrid registrations, quality and cultural awards, show success and general growing in collections. The directions for further breeding are less clear as there are so many registered hybrids now. Quality and competition success are not the only indicators for outcomes of breeding, as new hybrids can be steppingstones to new advances.

In this issue the distribution range for *Bulbophyllum macphersoni* is extended to New Guinea by Neville Howcroft, who was a frequent contributor to the journal in the early years. He reported this to a limited audience some years ago. Paul Ormerod has tracked down an earlier name for *D.* × *gracillimum* in a UK gardening magazine. The new combination under *D.* × *nitidum* meets the criteria for botanical nomenclature. This name was also used for a variant of *D.* × *delicatum* in the early 20th C (*The Orchadian*, Dec. 2019). The photographic competition at the ANOS Conference and Show in Strathpine in 2019 was a great success, and Melissa Young and Callyn Farrell present a report and photographs of some entries.

Ira Butler Trophy Results for 2019

Ira Butler Trophy for Best Australian Hybrid was awarded to *Dendrobium* Australian Butter Bright 'Razz'. Grower Carole Barnett; breeder Australian Orchid Nursery.

Bill Murdoch Trophy for Best Australian Species was awarded to *Cymbidium canaliculatum* 'PR1'. Grower Carole Barnett.

G Hermon Slade Trophy for Best Australasian Hybrid was awarded to *Dendrobium* Martin 'Gold'. Grower Down Under Native Orchids; breeder Brian Gerhard.

G Hermon Slade Trophy for Best Australasian Species was awarded to *Dendrobium alexandrae*. Grower Phil Barrett.

A full report on the Ira Butler awards will be in the next edition of *The Orchadian*.

Peter Adams

President's Report

The ANOS membership is saddened by the news of the recent passing of ANOS foundation member and *The Orchadian* Editor Murray Corrigan, as well as Barry Collins and Jim Lykos.

ANOS objectives were listed and briefly discussed in the last President's Report. In the three years to August 2019, some key objectives were met by ANOS Council. These included establishment of the on-line Australian orchid registered hybrid list, upgraded in January 2020, downloadable and printed as required. This has been a major advance over printed lists that are quickly outdated. There will be some errors as in all lists, and if you see them, please notify the webmasters so that corrections can be made. Other key activities have been the upgrading of the journal and expansion of writers for *The Orchadian*, upgrading of the Judging Handbook and ANOS newsletter, and publication of ANOS awards in the journal. The 2019 ANOS Conference and Show took considerable time and effort over two years and future options for this event will be considered. Conservation and other important activities were supported by the Conservation Officer, Roslyn Capell, and now by the current officer, Geoff Curry, by raising issues in *The Orchadian*, newsletters and at Council meetings.

There are major issues for ANOS Inc. to consider in the next two years. To meet ANOS objectives which relate to knowledge, conservation and dissemination of information, a way must be found to make all past and future issues of *The Orchadian* available on-line, for greater use in Australia and internationally. ANOS can consider publishing important information with a greater access to the wider community, beyond the membership base. The sum of all these activities represents a considerable effort and demand on voluntary ANOS members who serve on Council and the associated groups. Office bearers serve a relatively short time in the context of the organisation, and there should be active and positive support from members.

The uncontrolled bushfires have involved most states and discovering the extent of loss of orchids and their habitat will take some time. Damage in some areas is unprecedented in the known history and the status of some species and populations is uncertain. Government agencies such as herbaria and those responsible for environment and land management will make assessments and plans for recovery. We will publish results when available, in relation to orchids. Members may have information on the fate of some species in their local region and they could share it in the newsletter. Our thoughts are with members and other growers who may have sustained losses, including property, business and orchid collections. The website and newsletter could be used to indicate how members could assist others who have losses and want to start again.

Congratulations to Andrew Brown, a contributor to *The Orchadian*, for receiving the Australian Orchid Foundation Award of Honour. He has researched Western Australian orchids for more than 40 years, particularly in biology, taxonomy, ecology and genetics. There is a report of his wide-ranging activities in *Orchids Australia*, Vol. 32:1, February 2020.

Peter Adams

Tribute to Murray Corrigan 1931–2019

Michael Harrison

The passing of Murray Corrigan on Sunday 29th September 2019 marked the end of an era for the Australasian Native Orchid Society. Murray was the last of the central core of foundation members who planned and established the Society in 1963. As a member of the formative committee that laid the groundwork prior to the inaugural meeting on 6th July 1963, Murray joined with Bill Murdoch, Walter Upton, Eric Gordon, Steve Clemesha, Ron Kerr and others to produce an ANOS Constitution, which included the objectives of the society, objectives that are as relevant today as they were nearly 60 years ago. At that inaugural meeting, Murray was elected Editor of *The Orchadian*, a role he held from 1963 to 1977. On page 2 of the first edition of *The Orchadian*, Volume 1 No. 1, published August 1963, Murray wrote in an editorial note: "Interest in our native orchids has always been widespread – but never united. Our conservationists, growers and bush lovers total a mighty force – which has been without an authoritative and effective voice. The Society was formed to change this, its strength depends on the interest you personally project into the organisation." Reading these words today, you can sense the passion and commitment Murray felt at the time, and there is also a sense of excitement that Murray's words still convey.

Murray held the position of Editor of *The Orchadian* for 14 years, longer than any other subsequent editor, and during that time he worked tirelessly to ensure the quality and accuracy of the journal. He took great pride in *The Orchadian*, and I remember he once told me that his way of weeding out spelling mistakes was to read the copy backwards, word by word, a slow but effective method. As editor, Murray developed a team of contributors to *The Orchadian*, including many influential and authoritative authors. Notably, Alick Dockrill was one of the most prolific of those early writers. Murray encouraged both scientific and cultural articles, and always seemed to be able to fill the pages of the journal with fresh and interesting material. For many years, he typed all copy on a manual typewriter and, in the days before photocopying, the journal was produced by high speed Roneo equipment from the typed stencils, and then collated, stapled, folded and enveloped by a small group of members in a work room of Eric Gordon's cabinet making factory in Goulburn Street, Sydney, taking a glass or two of Eric's good scotch (pers. comm. M. Corrigan) and enjoying the fellowship. Murray was granted Life Membership of ANOS in 1975 for his outstanding service to the society as editor of *The Orchadian*.

In all, Murray was a member of ANOS Council for 18 years, with a hiatus between 1979 and 1984. Murray served as President of ANOS from 1986 to 1988, a role he filled with dedication and purpose. Meetings were always lively under his chairmanship. He was never short of an opinion and he encouraged other members to express their thoughts. At times he could be quite stern, if he thought the situation required it, but generally he was even natured, gentle and good-humoured with those around him.

Murray James Gibson Corrigan was born at Hay, in regional NSW, on 27th June 1931 to a pastoral family. He came to Sydney as a boarder at Mowbray Road Grammar School in the early 1940's, and it was during this time his life-long interest in orchids began. Writing in *The Orchadian* in September 1988, at the end of his term as president, Murray reminisces about his purchase of Rupp's *The Orchids of New South Wales* which he bought "as a school-boy on day leave from boarding school for 2/6". This would have been in 1944.

In his business life, Murray had a varied career, working as an accounts manager at an advertising agency, an Advertising Manager for Warner-Lambert Pharmaceutical Company, (during which time he met his wife-to-be Joan), Print Production Manager for the Avon Cosmetics Company, Sales Director for plastic laminates company Plastic Surfaces and, in a semi-retired capacity, a Special Projects Manager at RSL Veterans Retirement Villages.

After marrying in 1960, Murray and Joan lived for a time in Haberfield, in Sydney's inner west. In 1967, they bought land, built a house and moved to Elanora Heights, on Sydney's northern beaches, where their two children, Samantha and Adam were born. Murray's great friend Wally Upton lived just a few streets away. In the backyard, Murray grew a wide range of orchids in a large unheated glasshouse, and also in a shadecloth covered bush house. In addition, he had many orchids growing on slabs which he hung over and around a large fishpond. His main focus was Australian native orchids, species in particular, but he also grew many exotic orchids. His favourite genus was, I believe, *Bulbophyllum*, and he had a fine collection of these species. He loved the enormous diversity in this group of orchids, and he grew them well, marvelling at the intricate shapes and appendages, and the striking colours, and if he had a new species in flower in the collection, he would excitedly take you straight out to see it. One of his favourites was the New Guinea species *Bulbophyllum graveolens*. In later years he developed an interest in *Stanhopea* species, and he amassed a large collection, many of his baskets hanging on a shade covered frame beside the glasshouse. His orchid labels were always beautifully printed in his distinctive hand, with botanical names written in full and each letter perfectly formed. On the reverse side he would record provenance and repotting details. His labels were a thing of beauty. His famous plant *Dendrobium kingianum* 'Corrigan's Red', which won for him a Gold Medal for Pre-Eminent Exhibit at the OSNSW Sydney Town Hall Show in 1968, is still a fine, strongly coloured, free flowering example of this species, and a plant I treasure in my collection.

A gregarious, sociable and articulate man, Murray enjoyed the company of others. He was one of those larger than life characters, a big man with a big personality. He stood 6 ft. 2 ins. and wore size 12 shoes. As a speaker, he was engaging and entertaining. He liked having the floor and filling the room with his powerful voice. He always spoke with great confidence and knowledge and was able to carry an audience with him. He enjoyed nothing more than having a few friends around the dinner table, with a hearty meal and bottle or two of good red, chatting, laughing and telling stories, sometimes about orchids and sometimes not. Murray was a generous man with a big heart, always willing to share his knowledge and his resources.

Murray was a perfectionist, with an attention to detail and precision. At times he could be pedantic, but his rationale was always to get things right. In particular, he abhorred incorrect spelling or pronunciation of orchid names. As an editor, he paid close attention to grammar and syntax, and he would go to great lengths to ensure accuracy and completeness. He loved to research, and his intellectual approach to the scientific side of orchid growing led him to appreciate and understand the complexities of taxonomy and classification. He liked to keep up to date with advances in orchid science, and he was well versed in the International Code of Botanical Nomenclature, and issues of nomenclature and registration. In the early 1970s Murray was an Australian representative to the International Orchid Commission on Classification, Nomenclature and Registration.

As an amateur field naturalist, Murray loved to go looking for and studying orchids in the wild, and he told me many stories of his exploits with Wally Upton, Eric Gordon and others as they searched for elusive species, both terrestrials and epiphytes, across many parts of the country. It was a passion that never left him.

As much as he loved collecting and growing orchids, Murray was also a collector of orchid books. He had a huge library of thousands of orchid publications and other reference materials, all catalogued and neatly arranged in his study. Indeed, he was a sucker for any new orchid book to add to his collection, and vendors at orchid fairs had no trouble in persuading him to purchase a new publication or two. His ability and willingness to research a particular orchid related topic was legendary and, if the interest took him, he would spend many hours poring over his books to extract every last detail.

From its inception in 1977, Murray was deeply involved in the compilation and production of the *ANOS Checklist of Australian Native Orchid Hybrids*. He was senior editor from 1988 to 2005 and he maintained the lists, originally on a card system, and later on a data base. He was meticulous at checking the breeding background of each new hybrid to ensure eligibility, and his family tree calculations represented an enormous amount of work. He was insistent that all names must be botanically accurate, up-to-date, and correctly spelt. In everything he did, Murray spent hundreds of hours in researching and maintaining the lists.

Murray was instrumental in the establishment of the ANOS Judging Panel. He was one of the four foundation judges of ANOS appointed by ANOS Council to conduct the first ANOS Judging School in 1978. In combination with Wally Upton, Lloyd Bradford, Bob Lowe and Phil Spence, Murray wrote the ANOS Rules of Judging (later to become the ANOS Judging Handbook), which included the ANOS Judging Standards, and he oversaw the running of that first judging course, as well as a number of later courses. He wrote the syllabus, helped to organise the various speakers, and he set and marked the examination paper. At the completion of the course, ANOS Council formally instituted the ANOS Judging Panel, and the successful students were progressively appointed to the Panel. Lloyd Bradford accepted the position of inaugural registrar of the judging panel, but following Lloyd's death in May 1984, Murray took on that role. He was ANOS Registrar of Judges from 1984 to 1987. It became somewhat of a tradition for Murray to deliver the introductory address to students at subsequent ANOS Judging Schools, outlining the course and the course requirements, giving a history of the establishment of the Panel, and advising the students of their obligations to ANOS and the ANOS Judging Panel. He would always insist that ANOS Judges must wear their ANOS Judge Badges during judging, whether at shows or at monthly group meetings.

Murray was the driving force behind the establishment of the Ira Butler Trophy Committee. Following Ira's death in 1972, three of his friends, John Stuart, Eric Gordon and Murray Corrigan, decided to set up a memorial trophy to honour and perpetuate the memory of Ira Butler and his pioneering work with native orchid hybrids. After approaching the family to get their blessing, Murray helped to write the rules and establish a committee to oversee the organisation. Initially, Eric Gordon accepted the position of Chairman/Treasurer of the Ira Butler Trophy Committee and Murray was Secretary. John Stuart became Vice Chairman, and later Chairman. The Committee was expanded to include three ANOS Judges and three OSNSW Judges, and one independent member. It was decided to create two different Ira Butler Trophies. The Ira Butler Outstanding Achievement Trophy was to be presented on irregular basis to a person who had made a significant contribution to the breeding of Australian native orchid hybrids, to be selected by the Committee, by choice or by nomination. As well, an annual competition format was introduced, whereby nominations were drawn from OSNSW Awarded Plants for that year, with the winner being granted the prestigious Ira Butler Trophy for Native Orchid Hybrid of the Year. As the Ira Butler Memorial Trophy evolved over time, administrative changes were made, the qualifying criteria were broadened, and other trophies were introduced, to be administered by the Committee. Murray remained on the Ira Butler Trophy Committee from its inception in 1974 until 2006, serving as a judge representing ANOS, and then as Chairman between 1996 and 2006.

Murray was a foundation member of ANOS Sydney Group when it began in October 1963. However, once ANOS Warringah Group was formed just one year later, then that became his local group. As a foundation member, he maintained that affiliation for the rest of his life, for many years as Patron of the group. He served the group in many capacities, including as president. In 1990, Murray was awarded Life Membership of ANOS Warringah Group.

Murray was a long-term member of both OSNSW and North Shore Orchid Society and he

had many friends in those societies. He served NSOS as a committee member in various roles for well over two decades, including 4 years as president, and he was also awarded Life Membership of NSOS. From its very beginning, Murray was a member of St. Ives Orchid Fair Committee, which conducts the annual orchid fair and show at St. Ives Show Ground. He was justly proud of the continuing success of this event and greatly enjoyed the camaraderie generated each August during the fair. He was in his element moving through the crowds, greeting people, shaking hands, chatting and catching up with old friends.

Outside of orchids, Murray was a keen and very skilled fisherman. He had an enormous collection of rods and reels, as well as other fishing paraphernalia. He seemed to be constantly in the process of fixing a damaged rod, checking a faulty reel, reworking a lure, or one of any other number of tasks, and only he knew where all the bits and pieces where and how they fitted together. Amongst other executive positions he held over the years, Murray was President of NSW Fishing Clubs Association from 1980–1984, and again 1995–1997. He was also President General of Australian Anglers Association 1981–1983. Murray was involved with Stony Range Botanic Gardens at Dee Why as a volunteer worker and consultant for over 50 years. He was a member of the management committee and also served as chairman for a time.

An author, editor, secretary, correspondent, photographer, designer, speaker, story-teller, field naturalist, plant grower and propagator, orchid judge, consultant, conservator, administrator, librarian, book collector and historian, Murray truly was a renaissance man, with many and varied interests. In particular, his remarkable efforts over many years contributed enormously to the establishment and continued well-being of ANOS, and there is no one to whom the Australasian Native Orchid Society owes a greater debt than Murray Corrigan. It was a pleasure and a privilege to have known him as a friend. Murray is survived by his wife Joan, children Samantha and Adam, and grandchildren Conrad, Poppy and Daniel. He was so very proud of all of them.

Dendrobium kingianum 'Corrigan's Red' Photo P. Adams

Bulbophyllum macphersonii Rupp – A New Distribution Record for Papua New Guinea

Text and Photos Neville H.S. Howcroft
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Abstract

Bulbophyllum macphersonii is described from Woodlark (Muyu) Island. A brief description of the plant and its habitat is provided and a live specimen that flowered in the Lae Botanic Gardens was lodged as spirit material. The Woodlark plants are identical to the Australian ones in plant morphology, habit, size and colour of flowers.

Introduction

This occurrence was reported in two submissions to the Papua New Guinea Forest Research Institute to document orchid flora records and distribution of Papua New Guinea orchids, for an active conservation project at that time (Howcroft 1933a,b) and in a paper on research and conservation in the Second Australasian Native Orchid Conference at Toowoomba, Queensland Australia (Howcroft 1933c). These records were not widely distributed.

During a trip to Woodlark Island in January to February 1993 we were examining the prospects of small-scale enterprises for sustainable villages. Orchid diversity was surveyed to consider a small-scale orchid industry on the island. Woodlark Island (Muyu Island) is one of several large island areas just north east of the East Papua islands region, in the south-eastern part of Papua New Guinea (Fig. 1).

Physical Environment and Climate

Woodlark Island lies approximately 280 km northeast of Alotau, Milne Bay Province There is a low ridge almost the full length of the island 80-300m high, dividing the island into west and east. There are cliffs in the north which rise to 100m abruptly from the sea. There are several small slow-flowering rivers and creeks which drain the island. The larger two are the Sinkwarai and the Lulai rivers, which empty into Kamaru Bay on the eastern tip of the island. The land area is 896 square km. The highest points are on the peninsula adjacent to Nasai Island, and on the land just east of Suloga harbour and south-east of Kulamadau. These range from 200–300m. The highest point on the island is 300m.

The island is described as an uplifted coral platform with a core of metamorphic rocks. The platform rises abruptly in the north and gradually slopes southwards, submerging and continuing as a submarine platform terminating as a semicircular barrier reef. Gold has been mined in small lodes and at the time of our visit some prospecting was continuing for gold and copper. The island is one of the earliest developed localities in Papua New Guinea due to gold mining.

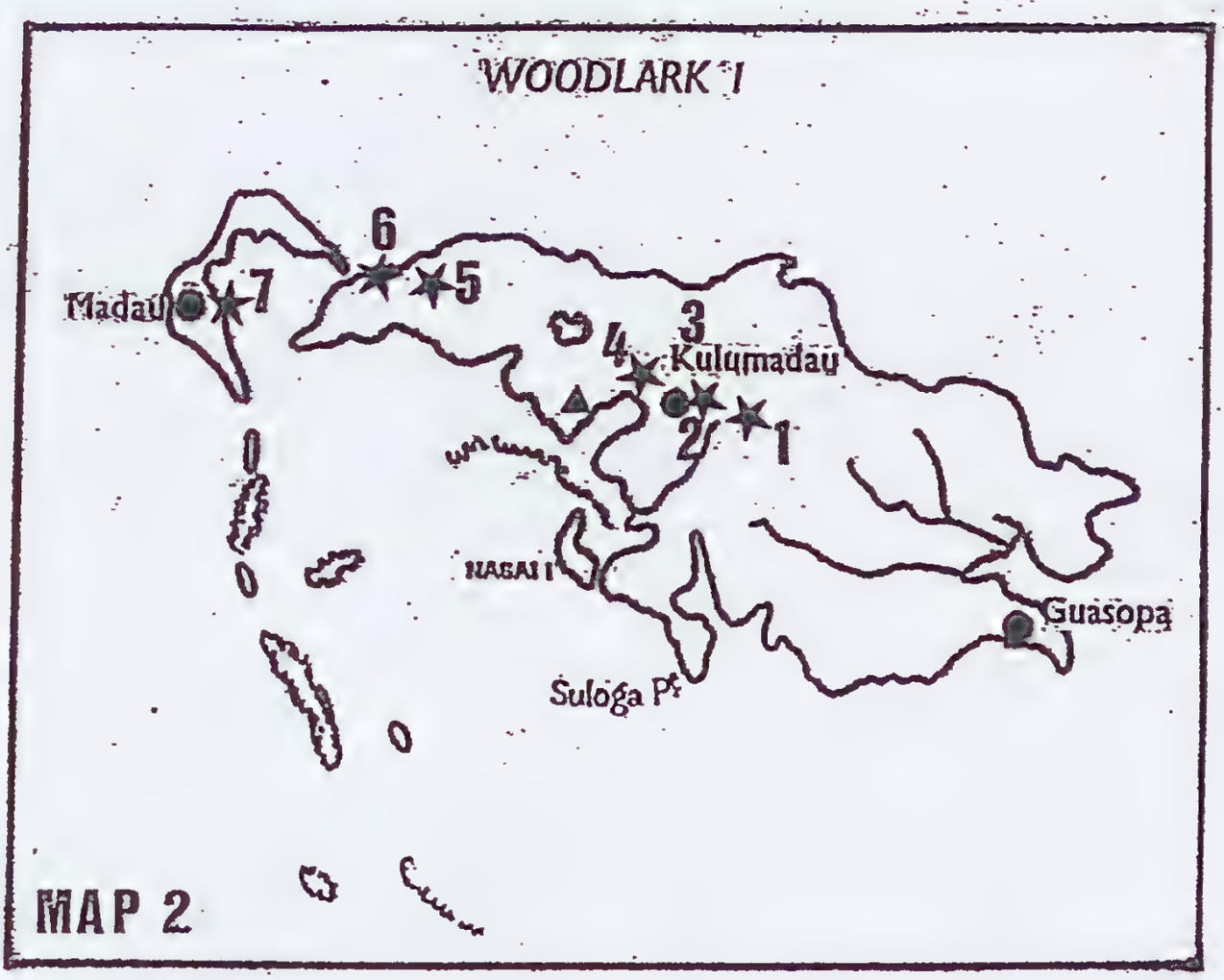
There are two other smaller islands close by – Madau and Nasai islands. Attached at the north-western end is a low-lying island known as Madau Island, which appears to be joined to Woodlark during low tides. There are lowland marshes and swamps on the island and several lakes, of which there are two notable ones, Lake Lelua and Lake Boiak. From the air it looks flat, as it does from a boat when travelling along the coast from the harbour near Kulamandau to Madau Island.

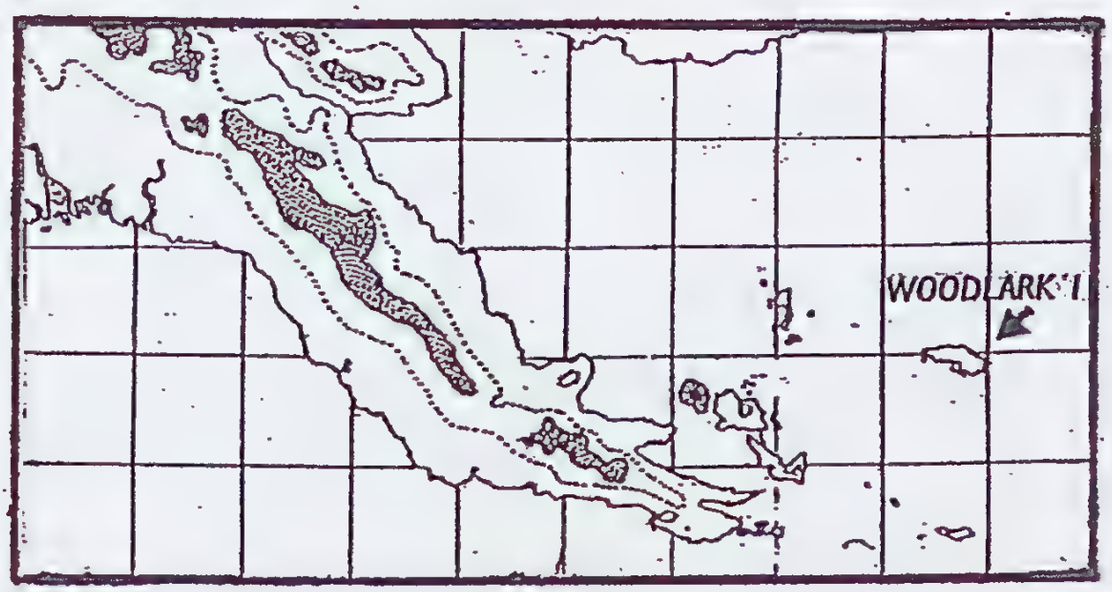
Climate is wet with no seasonality. It is classified as continually wet, but as can be seen from the rainfall data there can be some seasonality and drought. Maximum monthly mean temperature is between 31–27.6°C and minimum temperature 22.5–20.8°C (McAlpine et al 1975). Rainfall is relatively even throughout the year, between 283–360mm per month (Table 1). Tropical cyclones occur in the area. The habitat ranges from wet lowlands to open tablelands with some seasonality, providing an inclination of climate toward monsoon forest conditions.

Orchids

Woodlark is potentially an ideal island for orchids, with a uniform climate suitable for Australian, Asian and New Guinea species.

Figure 1. Maps of Woodlark Island at the eastern end of New Guinea.





Bottom map - position of Woodlark Island.
Top map - collection sites and reference points.

Key - ★ collection site
▲ Sawmill

There is often light cloud cover. Vegetation is lowland rainforest.

In the lowland rainforest there are epiphytic orchids on the few tall trees left after significant habitat loss. The terrestrial *Spathoglottis plicata* Blume, and perhaps more commonly *Spathoglottis paulinae* F.Muell. have colonised parts of the disturbed edges of roads with grass and weed species.

Beach vegetation is the second zone, and all *Bulbophyllum* species were collected in these areas, especially where the host trees thrust their branches over the water. The other orchid species entwined the stems with no detectable orientation. In the mangrove canal, as we poled our aluminium dingy through, my first impression was that the plants might be seedling *Dischidia* due to the tight clumped habit and small size and shape of the leaves. *Bulbophyllum* plants were moderately common and growing with several *Dendrobium* species as well as *Eria bractescens*, which was very common and in flower. A closer examination of these other plants revealed leaf colour of the clumps varied from light to dark green.

Bulbophyllum macphersonii had a tendency to grow on the underside of tree branches, particularly white fruit *Syzygium* species similar to those around beach dunes and forests in Cape York, Papua New Guinea and island coast strips. They also grow on mangroves *Bruguiera gymnorrhiza* and *Barringtonia asiatica*. *Terminalia catappa* also supports *Bulbophyllum* (Figs. 2,3).

The orchid survey in January and February 1993 yielded 24 genera and 56 species. Seven *Bulbophyllum* species were collected and four identified, including *B. macphersonii*. Other significant finds were *B. gracillimum*, *Eria bractescens*, *Eria kingii*, *Luisia teretifolia*, *Micropera fasciculata*, *Pomatocalpa macphersonii*, *Robiquetia gracilistipes*, *Spathoglottis paulinae*, *Thrixspermum congestum* and *T. platystachys*.

Record of New Collection

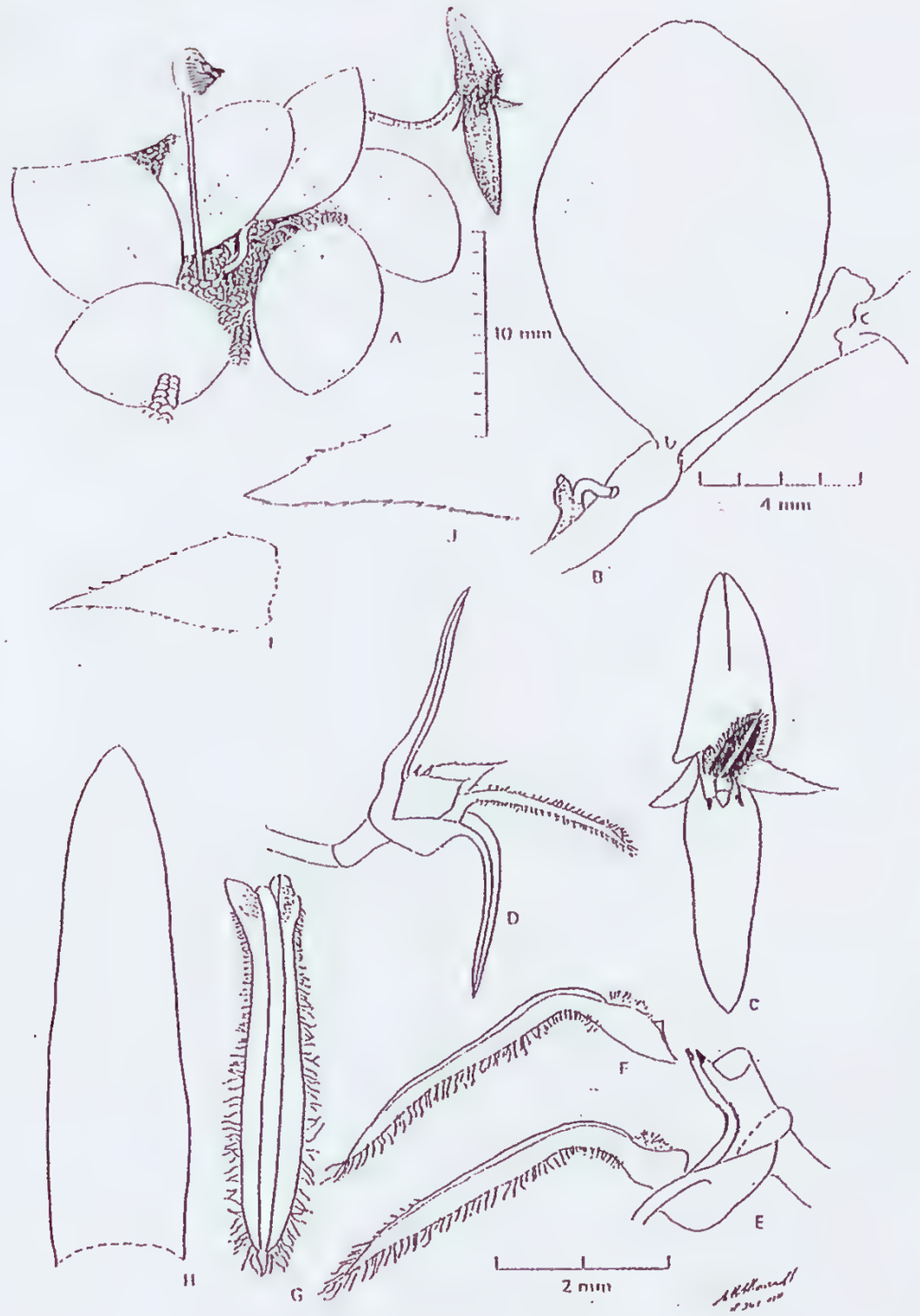
Bulbophyllum macphersonii was found on Woodlark and Madau islands on the lower branches of trees overhanging the salt water, or near salt water on boles and branches, and on *Barringtonia asiatica* and *Syzygium* aff. *peekelii*. The first collection was from a felled mangrove tree on Madau Island (Fig. 1, map 2 site 7) Three more specimens were collected from beach trees on Woodlark Island in flower bud stage (Fig. 1, map 2, site 6). Two live specimens were lodged in the Lae Botanical gardens and are represented by spirit material in the herbarium as HOWCROFT 703.

Discussion

Bulbophyllum macphersonii was previously regarded as an Australian endemic, occurring from Cooktown to Townsville and Proserpine and Rockhampton (Lavarack and Gray 1985). The species in Papua New Guinea and Australia show a distinct similarity in preference for tall mangrove forest as well as some host specificity among the forests of the shoreline. Presently the coastlines of both southern New Guinea and eastern Australia do not suggest any land bridges with the Woodlark islands, but this may not reflect past connections. Biographic distributions of *Bulbophyllum* sections range according to their association with different classes of terrain (Vermuelen 1993). Without further collection of this species around the coast of the southern regions and the islands of PNG there will continue to be gaps in our records. This tiny and elusive orchid can easily be overlooked when moving through the bush and even mistaken for *Dischidia*.

The island is a long way from the north Queensland plants. We know that Australia was once connected by a land bridge c 60,000 years ago but Woodlark Island seems to have been part of a mountainous land system now submerged close to the high islands Goodenough, Fergusson and Missima. These share some flora that are found on the PNG mainland and occur in parts of Cape York, the north and southern coastal ranges and islands of Queensland. The prime

Figure 2. *Bulbophyllum macphersonii*. N. Howcroft



Bulbophyllum macphersonii Rupp. A. Plant habit (Scale 10 mm). B. leaf and pseudobulb, enlarged (4 mm scale). C. Flower enlarged (4 mm scale).D. Flower enlarged, side view (4 mm scale). E. Column and labellum, side view (scale 2 mm).F&G. Labellum from side and top (scale 2mm). H. Dorsal sepal (2mm scale). I. Petal (to 2 mm scale). J. Tip portion of petal showin margins (enlarged, not to scale).
Drawn by N. Howcroft.

Table 1. Woodlark Island rainfall record at Kulamadau.

Month	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Rainfall mm	360	338	356	354	313	348	337	359	353	329	283	306

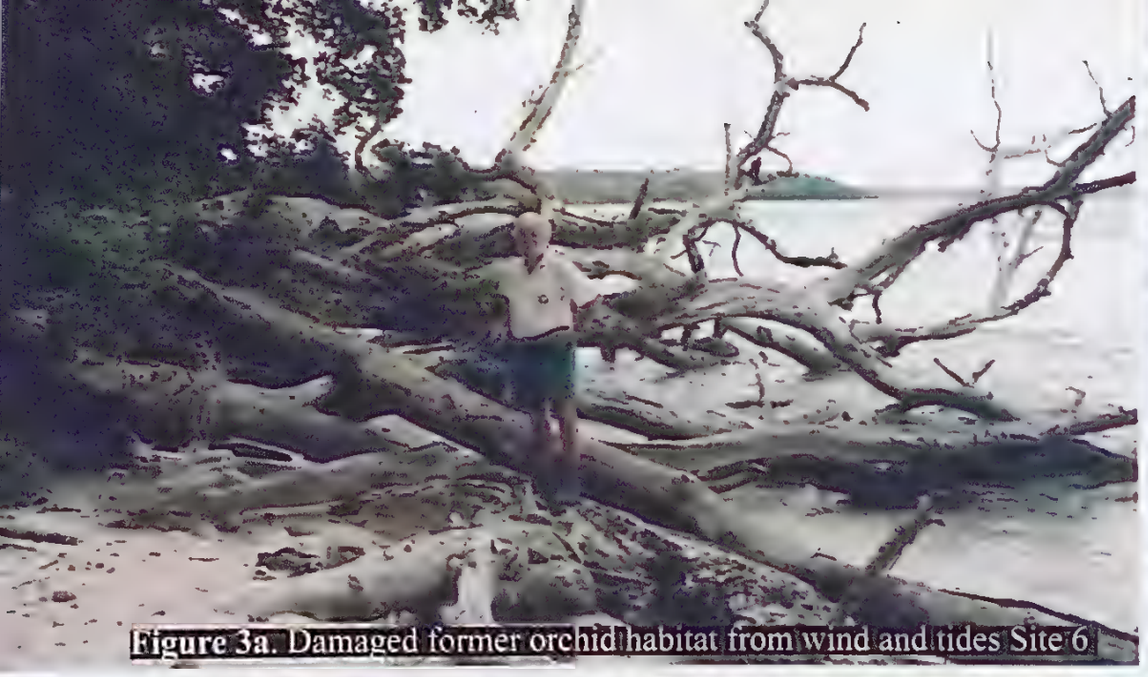


Figure 3a. Damaged former orchid habitat from wind and tides Site 6

Figure 3b. Collecting

Figure 3c. Canal with mangrove orchid habitat

Figure 3d. Our mode of transport through the canals

chid samples from felled mangroves at Site 7

example is *Araucaria cunninghamii* (hoop pine), which is found on Fergusson Island and the PNG mainland at Mt. Nelson of Milne Bay. It seems very likely that this tree arrived here via a now submerged land bridge. Unlike klinki pine (*Araucaria hunsteinii*) it cannot disperse its seed long distances over water. Orchid seed has a better chance of wind seed dispersal. Present day Australian population habitats share some similarities and have many of the same orchid species that also occur on Woodlark Island.

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Acknowledgements

I wish to acknowledge the assistance of the Foundation for the People of the South Pacific and FRI/Flora Conservation Project to visit and survey the orchid flora. In particular my thanks go to the FSP directors Mr. Dave Vossler and Mr Yati Bun.

Neville Howcroft spent many years working in New Guinea and was a regular contributor to early issues of The Orchadian, writing on a variety of New Guinea species.

Breeding Cool Growing *Dendrobium* (section *Dendrocoryne*) Yarra Hybrids

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Summary

In the Yarra series, predominantly *Dendrobium kingianum*-style hybrids were bred over 25 years by crossing well-known *Dendrocoryne* hybrids with quality line bred *D. kingianum*. *Dendrobium tetragonum* was not included in the strategy as it dominates flower colour and produces star shapes. The *D. kingianum* style is predictable with *D. kingianum* compositions in the range 38–76%, increasing over that range. The hybrids produced a range of attractive pastel colours with large, finely spotted labellums. Yellow-orange, pale green, white and mauve flowers and multicolour combinations result from involving *D. fleckeri*, (usually from *D.* David Adams) and from *D. gracilicaule*. The Yarra plants are usually compact and shorter than the initial parents, with improved flower quality. Flower counts are moderate, as expected with *D. kingianum* influence, but floriferousness is usually good. These hybrids are a significant development in cool-growing spring-flowering *Dendrocoryne* breeding.

Introduction

Breeding orchids to a set of objectives is a slow process with considerable investment in time, space, materials and patience. It may be 20 or more years before the venture can be assessed, and in that time the plants have often been scattered far and wide, sold or lost. This may partly explain why so few breeding projects are evaluated. Some brief accounts appear in *The Orchadian* and other journals from time to time, usually involving particular plants, colours or newer styles. Detailed accounts that can lead to more informed choices and better predictions of outcome are uncommon and are of interest to plan breeding in the future.

In this article, I report on a few decades of producing cool growing hybrids that are floriferous, compact, and relatively short growing - different from the *D speciosum* and *D. tetragonum* dominated breeding over the last 30 years. My experience in growing seedlings from other sources was not very rewarding, so I began my own program. There are advantages in raising plants under local conditions right from the start. The main objective was to develop new plants styles and colours, and to learn something about the complexities of inheritance patterns from familiar cool growing Australian species.

Questions

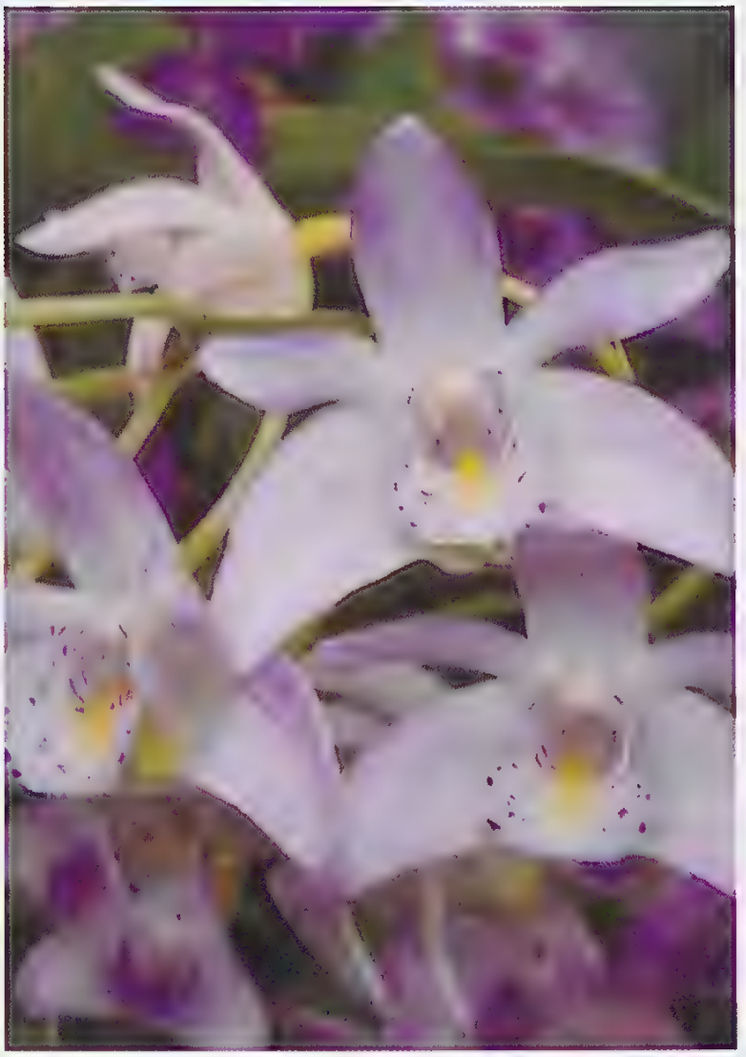
1. What are the outcomes of breeding a line of cool growing *Dendrobium* hybrids in southern Australia?
2. What improvements, if any, are there in vegetative and floral characteristics compared to the parents?
3. Can theoretical general predictions about the influence of key species *D. speciosum*, *D. kingianum*, *D. gracilicaule* and *D. jonesii* be assessed by examining outcomes?
4. What trends in plants and flowers are seen when plants with a range of background *D. kingianum* (12–75%) are assessed?
5. What provisional findings can be used for further goal–oriented breeding? What background percentage of species are likely to produce specific outcomes such as yellow colour, more compact plant size and quality flowers?

In the 1990s I concentrated on *D. kingianum* line breeding, with occasional ventures into *Dendrobium* hybrids – remakes of *D.* Jesmond Gem and crosses involving *D.* Yondi (using a plant from Sid Batchelor) and *D. kingianum*. *Dendrobium tetragonum* and *D. speciosum* dominated hybrids were being produced in quantity by others, so a decision was made to concentrate mainly on lines where these species were not dominant.

The Study

Pollinations were made in 2003–4 and two flasks from each cross with 20–60 plants were grown to flowering size. There were some losses, and some plants that flowered with low quality were culled in the first five years, so the final group

D. kingianum 'Pale Dragon'



D. Yondi

D. Jesmond Gem 'Olive Adams'

is not entirely unselected. As plants developed, the number and quality of flowers improved with increasing plant size. The growing season in an outer Melbourne suburb is relatively short (about six months), so the plants grew slowly and reached 15 cm pot size in 2014–18.

Some *D. speciosum* style hybrids were used with >50% *D. speciosum* in the background. The plant 'Windermere' was known to be a good parent, with flowers not excessively large and allowing colour to pass to progeny. *Dendrobium* Jesmond Gem remakes of award quality were used in the program.

In the 1990s two crosses involving significant *D. fleckeri* background were made, with and without *D. gracilicaule*. These were *D.* Les Adams (*kingianum* x Gracious Cascades) and *D.* David Adams (Yondi x Eureka). The progeny flowered with yellow–white and other colours. *Dendrobium* Les Adams was made in 1990 and *D.* David Adams was made in 1991, with both being registered in 2003. *Dendrobium* Valmai Charm (Kim x *speciosum*) was added to the program for floriferousness. This is a *D. kingianum* style flower with vigorous growth and 12% *D. fleckeri* in the background.

The second phase was using the above starting material to make further hybrids. Two Yarra hybrids *D.* Yarra Gold (Sunstar x Eureka) and *D.* Yarra Silver (Ruppiosum x *kingianum*) are not *D. kingianum* style hybrids, so are not included in this article.

Measurements and other recordings were made in the 2018 season, a year which was noteworthy for short racemes and rather clumped flower arrangement in *Dendrobium* species and hybrids. Flower counts were mostly higher in 2017, there may be further improvement in more favourable future seasons. Most plants are now at or near mature cane height. The number of plants recorded in the results reflects the numbers available, with 4–10 required to demonstrate major variation in plant form and size, and flower colour and quality.

Important Breeding Plants

Line-bred *D. kingianum* were generally used as parents, including 'Pale Dragon' and other siblings of the cross 'Purple Peon' x 'The Monster'. These have high quality shape, large flowers of heavy substance, and up to nine flowers per raceme. 'Pale Dragon' produces aerials that can reduce display quality, but this characteristic is not usually inherited. 'Windermere' was the main *D. speciosum* used. *Dendrobium* David Adams has a high percentage of *D. fleckeri* (38%) and 25% *D. kingianum,* and became a major contributor to the program. *Dendrobium* Les Adams was used to a lesser extent.

Dendrobium Jesmond Gem
Parents used were from a remake (*D.* Yondi 1368 x *D. speciosum* 'Windermere') and produced several quality awards, including two FCC/AOC. The plants are slow-growing and canes eventually reach 50 cm, but they are not as large as *D. speciosum* style hybrids. The canes are robust, wide, fusiform at the base, with long arching racemes of 18 or more flowers. The flowers are usually white to yellow, occasionally yellow–orange, up to 3.8 cm wide and of high quality and heavy substance. They usually have more than one raceme per cane, contributing to floriferousness. The parentage and species composition of the important breeding plants are listed in Tables 1 and 2.

Dendrobium Yarra Ranges
(background 75% *D. kingianum*, 18% *D. speciosum*, 6% *D. gracilicaule*, no *D. fleckeri*). Compact short plants, first flowering after four years. Flowers are white with purple spots on the labellum, contrasting with the white tepals, medium–sized (3.0–3.7 x 3.0–3.5 cm), of heavy substance. Racemes tend to be short, with 5–9 flowers. Plants are still relatively small.

Dendrobium Les Adams
(background 50% *D. kingianum*, 37.5% *D. speciosum, D. gracilicaule* 12.5 %, and no *D. fleckeri*). Compact short plants that flower moderately well each year and flowered within 3–4 years. Flowers are white with fine purple spots on the labellum, have heavy substance and the racemes are arching. The floriferousness is probably not sufficient for quality awards.

Dendrobium Yondi
(background 50% *D. kingianum*, 25% *D. speciosum,* 25% *D. fleckeri*). Medium height

Table 1. Origins of Yarra series hybrids.

Dendrobium Hybrid	*Dendrobium* parents	Registration
Yondi	*kingianum* x Eureka	S. Batchelor 1982
Jesmond Gem	Yondi x *speciosum*	J. Purvis 1987
David Adams	Yondi x Eureka	P & S Adams 2003
Les Adams	*kingianum* x Gracious Cascades	P & S Adams 2003
Yarra Charm	Valmai Charm x *kingianum*	P & S Adams 2009
Yarra Mist	David Adams x *kingianum*	P & S Adams 2009
Yarra Song	David Adams x Les Adams	P & S Adams 2010
Yarra Moon	*kingianum* x Jesmond Gem	P & S Adams 2012
Yarra Quartz	Les Adams x Yondi	P & S Adams 2012
Yarra Star	David Adams x *speciosum*	P & S Adams 2012
Yarra Cloud	Les Adams x Jesmond Gem	P & S Adams 2014
Yarra Street	Les Adams x *speciosum*	P & S Adams 2014
Yarra Glen	Valmai Charm x *speciosum*	P & S Adams 2016
Yarra Ranges	Les Adams x *kingianum*	P & S Adams 2019

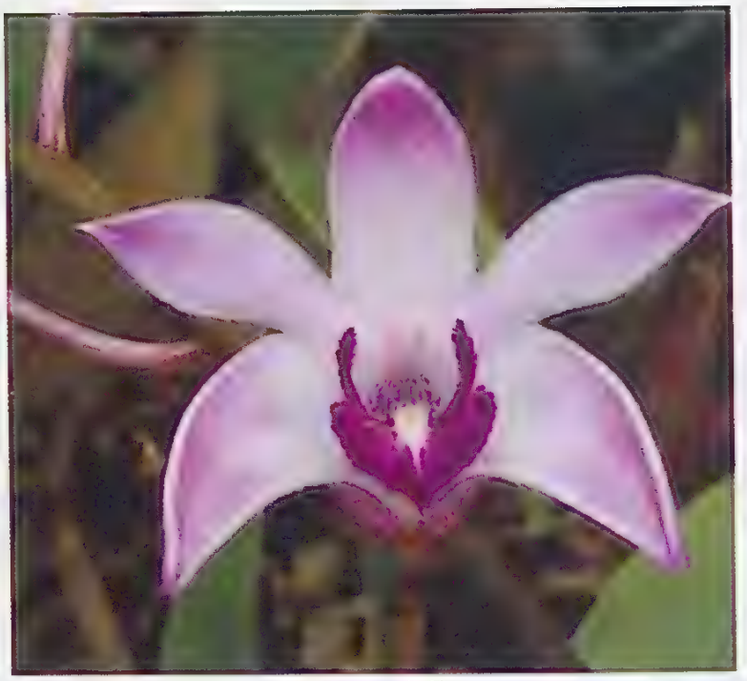
Table 2. Background species composition in Yarra hybrids.

Dendrobium Hybrid	% *D. kingianum*	% *D. fleckeri*	% *D. gracilicaule*	% *D. speciosum*	% *D. falcorostrum*	% *D. speciosum*	No. plants sampled
Yondi	50	25	0	0	0	25	2
Jesmond Gem	25	12	0	50	0	12	4
Les Adams	50	0	12.5	37.5	0	0	5
David Adams	25	38	0	0	0	38	8
Yarra Ranges	75	0	6	18	0	0	7
Yarra Charm	62	6	0	25	6	0	4
Yarra Mist	62	19	0	0	0	19	8
Yarra Moon	62	6	0	25	0	6	7
Yarra Quartz	50	12	6	18	0	12	6
Yarra Song	38	19	6	18	0	19	7
Yarra Cloud	38	6	44	0	6	7	
Yarra Street	25	19	6	49	0	19	5
Yarra Star	12.5	19	0	50	0	19	10
Yarra Glen	12.5	6	0	75	6	0	4
Total							**77**

Table 3. Vegetative features of Yarra hybrids.

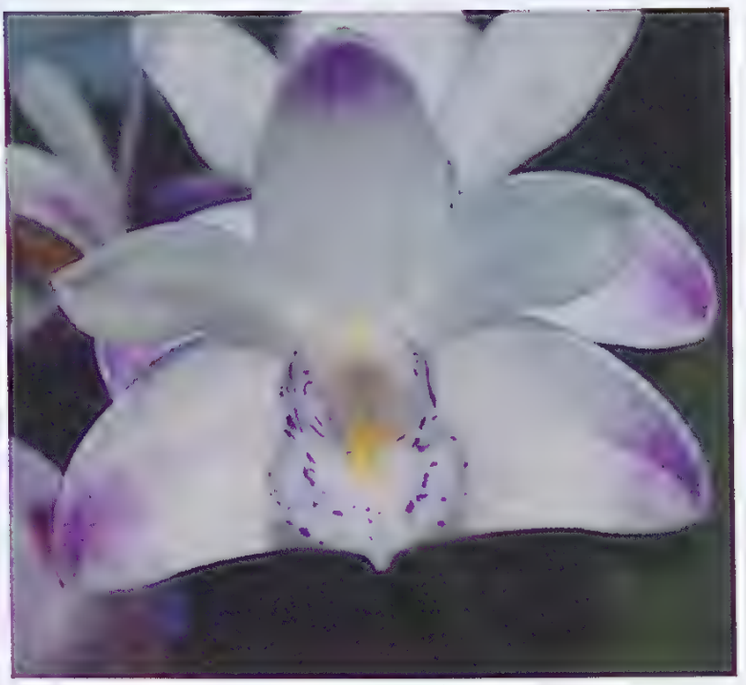
Dendrobium Hybrid	% *D. kingianum*	Cane ht cm	Cane width cm	Cane type	Plant height with flowers cm
Yondi	50	37-46	1.0-1.1	narrow	44-54
Jesmond Gem	25	36-49	1.4-2.3	fusiform at base	54-74
Les Adams	50	10-21	1.4-1.6	bulbous at base	20-37
David Adams	25	27-45	0.85-1.2	narrow, fusiform	37-60
Yarra Ranges	75	12-20	1.7-2.4	bulbous at base	18-38
Yarra Charm	62	18-26	0.8-1.7	bulbous, occasionally narrow	27-46
Yarra Mist	62	14-34	0.8-1.5	mainly bulbous, occasionally narrow or slightly fusiform	21-44
Yarra Moon	62	15-28	1.3-2.3	bulbous, some fusiform and widely expanded	27-44
Yarra Quartz	50	10-38	0.8-1.8	narrow, bulbous and fusiform	18-56
Yarra Song	38	22-39	1.2-1.5	fusiform	32-55
Yarra Cloud	38	16-36	1.3-2.0	fusiform or bulbous	28-50
Yarra Street	25	14-24	1.4-2.2	bulbous +/- fusiform	28-40
Yarra Star	12.5	16-47	1.5-2.2	fusiform	26-62
Yarra Glen	12.5	19-40	1.6-2.6	fusiform	27-67

D. Yarra Mist



D. Yarra Mist

D. Yarra Mist



D. Yarra Mist

D. Yarra Moon 'Butterfly'

D. Yarra Moon

plants with narrow short racemes bearing pastel pale mauve flowers of good shape and size. The short racemes may limit florifereousness in the progeny and use of a plant with longer racemes improves the quality of *D.* David Adams. Although there is 25% background *D. fleckeri*, the *D. kingianum* is dominant, and yellow and orange colours are not common in progeny. Multiple racemes are frequent.

Dendrobium David Adams
(25% *D. kingianum,* 38% *D. speciosum*, 38% *D. fleckeri*). Short to medium plants with narrow canes which flower regularly. The variety of colours in the cross, and combinations of 2–4 colours, is a major breakthrough. Yellow is a common colour with green–white and mauve, and even a redback/purple e.g. 'Stoplight'. All have mauve–purple spots and bars on the labellum and a glowing yellow central patch on the pale yellow midlobe. Multi-racemes are fairly common and contribute to high floriferousness. Flower size is moderate (5.0 x 5.0 cm), with shape ranging from starry to *D. kingianum* style. Plant height is variable. 'Dr. Geoff' received HCC/AOC, and had filled in, heavy-textured white flowers.

Results

Vegetative Features (Table 3)

In Yarra hybrids the influence of *D. kingianum* at 25–72% background produced compact shorter growth habit, with canes up to around 60 cm, but often much shorter. The hybrids have *D. speciosum* backgrounds of 10–49%. The maximum cane diameter is usually less than 2 cm. Some hybrids have fusiform canes with a collum (narrowing) at the base. *Dendrobium* Yarra Star and *D.* Yarra Glen have backgrounds of 12.5% *D. kingianum* and 50% and 75% *D. speciosum* respectively. The plant form of these hybrids shows some *D. speciosum* influence, but still have *D. kingianum* features and are classified as *D. kingianum* style.

Floral Features (Table 4)

All Yarra hybrids with ≥38% *D. kingianum* in their background resemble that species with respect to floral size and shape. The appearance of racemes and flowers is between *D. speciosum* and *D. kingianum*., increasingly resembling *D. kingianum* as the percentage composition of that species rises.

The following trends are seen:

- Increased floriferousness and flowers per raceme with decreasing *D. kingianum* from 75% to 38% in background.
- Multiracemes are more common as the amount of background *D. kingianum* increases.
- Largest flowers of heavy substance are seen in *D.* Yarra Moon, *D.* Yarra Song, *D.* Yarra Cloud and *D.* Yarra Star.
- Flower height increases with amount of background *D. speciosum.*
- hybrids with higher background *D. kingianum* produce mauve, yellow and green flower colour predominating, while *D. speciosum* dominated hybrids are white and yellow
- Labellum shape is different from *D. kingianum* in *D. kingianum* style hybrids, with a fine purple spotting in most plants.
- Yellow-orange and green are seen when *D. kingianum* in the background is ≤50%, and *D. fleckeri* or *D. gracilicaule* are in the background.
- There are striking colour combinations including yellow-green, mauve and red-mauve in *D.* Yarra Song and other hybrids with *D.* David Adams in the background.
- *Dendrobium* Yarra Mist, *D.* Yarra Cloud, *D.* Yarra Quartz and *D.* Yarra Song have rich pastel colours.

Characteristics of the Yarra Series of *Dendrobium* Hybrids

Nearly all the named Yarra hybrids are *D. kingianum*-style, apart from *D.* Yarra Star and *D.* Yarra Glen. (Table 1).

Dendrobium Yarra Ranges
Short compact plants, more robust than *D. kingianum*, with flowers that are mainly white, some with pale mauve or purple suffusion, finely purple–spotted labellums. Flowers are heavy in substance, medium size, outline triangular so are probably not of award quality. Petals are broader than *D. kingianum.*

D. Yarra Mist

D. Yarra Star

D. David Adams

D. Les Adams

D. David Adams

D. David Adams 'Dr Geoff'

Dendrobium Yarra Charm
The *D. speciosum* influence (25% background) gives medium to tall plants, with flowers with a white centre and a mauve–purple blush at the tips of the tepals. Labellum is white with purple spots and rays. They are floriferous and some have two racemes per cane. Quality is uncertain.

Dendrobium Yarra Mist
Upright, short to medium tall plants with narrow canes, grow more rapidly than most of the Yarra series, flower reliably, often two racemes per cane. Racemes tend to be short and somewhat crowded, with moderate to large, very well shaped and filled in flowers in attractive bright pastel shades of white to mauve–purple, with prominent purple on the labellum in the form of spots, rays and bars. The cross has award potential.

Dendrobium Yarra Moon
Shorter, robust, compact and vigorous plants with moderately large leaves, influenced by *D. speciosum*. Racemes hold 7–12 flowers. Flowers are relatively large and of heavy substance, showy and shape usually filled-in. Colours vary from white to deep mauve, with many splash-petal forms. The labellum is broad, white with fine purple spots or purple bars. 'Butterfly' received HCC/AOC-2016 and others have award potential.

Dendrobium Yarra Quartz
Medium sized, compact, urn–shaped plants with fairly narrow canes. All aspects of this cross show the influence of *D. kingianum*, especially the well-rounded pastel flowers on well-spaced racemes (1–2) with up to 17 flowers (average 10–12). There are some brilliant glowing pink-mauve flowers that may have a yellow tinge, not seen in many *Dendrobium* hybrids. This is probably due to the combined influence of *D. fleckeri* (2%) and *D. gracilicaule* (6%). 'Frank Lowe' has bright pinkish–mauve flowers and was awarded HCC/AOC as a small plant in a 10 cm pot. It has improved further. 'E. Lowe' is similar in plant growth and flowers, and also has award potential.

Dendrobium Yarra Song
As in *D.* Yarra Quartz there is a complex influence of five different species in the background that has produced a wide range of colours and colour combinations, some very striking. The plants are short to medium but compact and stouter than *D. kingianum*, with 1–2 racemes per cane. Flowers are similar to *D. kingianum* with white, mauve, green and lemon colours or in combination. The mixture of yellow and green, due to the influence of *D. fleckeri*, offer unusual floral features and the potential for further hybrid breeding. 'Peaches and Cream' ACC/AD/AM-ANOS 2018 is an outstanding example.

Dendrobium Yarra Cloud
Plants are medium to tall with medium to large sized flowers. Colours are white to mauve, with spotted mauve labellums. The flowers are of heavy substance, up to 14 per raceme.

Dendrobium Yarra Street
Plants are compact, robust, medium to tall up to 40 cm, most with relatively large pale green to yellow flowers, 14–18 per raceme, with heavy substance.

Dendrobium Yarra Star
Medium-size very robust plants of *D. speciosum* style with short fusiform canes, more than 1.5 cm diameter. Most less than 60 cm tall. Racemes are erect to arching with many larger flowers, up to 30 per raceme, and sometimes two racemes per cane. There are two colours - white or creamy yellow with purple spotted or barred labellums. The flower shape is variable and often closer to *D. speciosum* than *D. kingianum*. 'Icarus' received HCC/AOC 2014 as a small plant in a 12 cm pot.

Dendrobium Yarra Glen
Medium sized plants of *D. speciosum* style with urn shape. Similar to *D.* Yarra Star, with the same colours of white or cream to yellow. The flowers are large, the yellows tending to be superior in quality. *Dendrobium* Yarra Glen 'Lemon Meringue' was awarded HCC/ANOS 2019.

Predictions and Concluding Comments

The results of flowering a significant number of plants from each cross and considering the contribution of the component species enables a rough prediction of what might be expected in future crosses in developing the breeding lines.

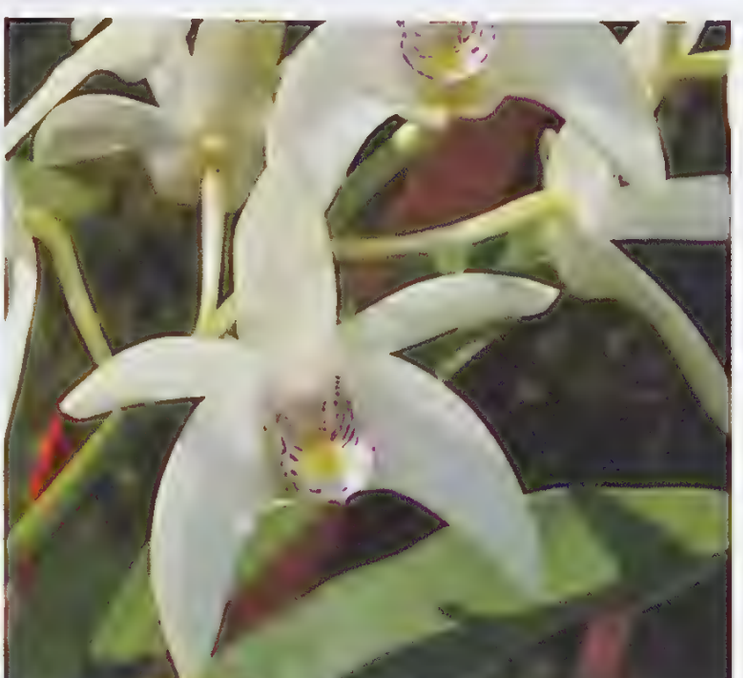
D. Yarra Song 'Peaches and Cream'

D. Yarra Ranges

D. Yarra Quartz 'E Lowe'

D. Yarra Cloud

D. Yarra Glen



D. Yarra Star

The variation in some crosses is wide, so that noting exceptionally good or poor quality plants is unpredictable and may take several seasons. For the Yarra hybrids produced so far, *D.* Yarra Song, *D.* Yarra Star and *D.* Yarra Quartz have produced the highest quality plants. *D*endrobium Yarra Mist, with large pastel flowers, has potential for quality awards. In general, the other hybrids are of lesser quality, but occasional plants look exceptional. They need to be grown well to produce an optimal result.

In all these crosses there are still plants to flower at a size necessary for optimal results, and a few yet to flower. Breeding and flowering new crosses takes much time, and the phase of developing and evaluating plants after the first flowering takes even longer, in this case up to eight or more years in my cool growing conditions.

Table 4. Floral features of Yarra hybrids.

Dendrobium Hybrid	% *D. kingianum*	Flowers per raceme	Multi-racemes	Flower width cm	Flower height cm	Tepal Colour	Labellar colour	Callus colour
Yondi	50	11	Yes	3.0-3.3	3.2	Very pale mauve, white centre	White, purple bars or spots	Yellow
Jesmond Gem	25	16-18	Yes	3.0-3.6	3.6-3.8	White, yellow, orange	White-yellow, purple bars or spots	Yellow
Les Adams	50	7-13	No	3.0-3.6	3.0-4.5	White	White, small purple or mauve spots	White, yellow, green
David Adams	25	7-11	Yes	3.0-4.9	3.0-4.2	White, yellow, green	White, lemon, cream, mauve; purple spots; yellow patch on midlobe	Yellow; +/- purple, green
Yarra Ranges	75	5-9	Occasional	3.0-3.7	3.0-3.5	Mainly white, mauve; purple suffusions	White; purple pepper spots	Green, yellow, purple
Yarra Charm	62	5-20	Yes	3.1-4.0	3.1-3.8	Mauve, purple, white with blush; white centre	White; purple spots and rays	Yellow
Yarra Mist	62	5-11	Yes	3.1-3.8	3.0-3.5	White, purple, splash; white centre	White; deep purple spots, rays, bars	Yellow, lemon, purple
Yarra Moon	62	7-12	Occasional	3.1-4.1	3.0-4.4	White, deep purple; mauve blush tips	White; purple spots or rays	Yellow, green
Yarra Quartz	50	7-17	Yes	3.2-3.7	2.9-3.9	Pale mauve, white	White; fine purple or mauve spots	Green, yellow
Yarra Song	38	8-21	Occasional	3.1-3.7	3.0-4.7	Green, white, yellow, mauve; multi-colours	White, lemon; purple spots or bars	Lemon, yellow, green
Yarra Cloud	38	6-14	Yes.	3.0-4.2	3.3-4.2	White, cream; mauve blush	White, cream; purple or mauve spots, bars	Yellow, green
Yarra Street	25	14-18	No	3.0-3.7	3.2-4.1	White, pale green, yellow	White; pale yellow; mauve or purple spots, bars	Yellow, green
Yarra Star	12.5	7-30	No	3.1-4.1	3.4-4.8	Yellow, white	Yellow, white; purple bars or spots	Lemon, yellow
Yarra Glen	12.5	11-30	Occasional	3.2-3.6	3.7-5.1	White, gold	White, yellow; purple dots or bars	Yellow, orange

Terrestrial Orchid Conservation in Victoria

Text and Photos Neil Anderton
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For over 25 years ANOS Victoria has been actively involved in hands-on conservation work in partnership with the current Department of Environment, Land, Water and Planning (DELWP) and its precursors, the Department of Environment and Primary Industry (DEPI), Department of Sustainability and Environment (DSE), as well as the Royal Botanic Gardens Victoria (RBGV), Parks Victoria and Landcare and Friends groups. Prior to this the main conservation focus was letter writing to various governmental organizations highlighting threats to orchids in Victoria. This overview will briefly cover how the involvement of ANOS Vic began, the early history, and some of the activities that members have been involved in. This paper will concentrate on the contribution of ANOS Vic to orchid propagation, with specific reference to the propagation of *Caladenia pumila* and searches for new locations of threatened orchids, with particular reference to *C. versicolor.*

The establishment of the Threatened Orchid Recovery Team (TORT) in 1996 could be seen as the start of active conservation efforts by ANOS Vic. TORT was a partnership between DSE (now DELWP), RBGV, ANOS Vic, Parks Victoria, Melbourne Zoo, the University of Melbourne, Victoria University and RMIT University. The aims of TORT were to plan and manage a broad-based recovery program to save Victoria's threatened orchids. It was assisted by 40 agencies, community groups and individuals in Victoria, interstate and overseas. The widespread support and success in developing and implementing recovery strategies for over 80 threatened species led to the 2006 Banksia Land and Biodiversity Award for the project 'Back from the Brink: Saving Victoria's Threatened Orchids.'

ANOS Vic had established a tuber bank in the early 1970s and had developed an extensive knowledge base on the culture of terrestrial orchids. The group was able to contribute skills in identifying terrestrial orchids, and expertise in growing them from seed since the late 1990s. There was a supply of willing volunteers to assist in planning, and field and laboratory work.

Orchid Propagation

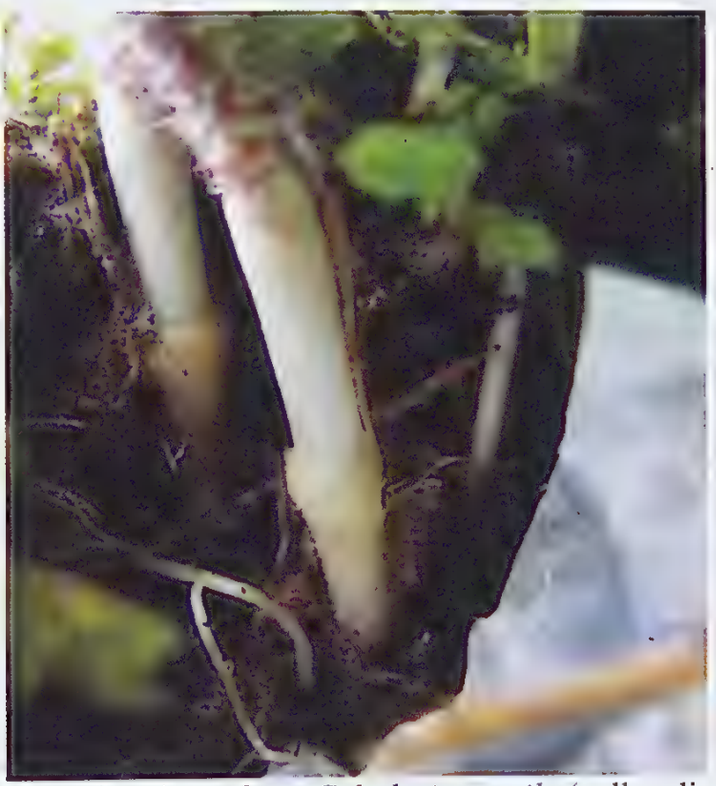
Volunteers have been involved in orchid propagation at RBGV since about 2000, and more recently at Cranbourne in the orchid conservation program. Orchids for reintroduction have been grown by the RBGV since the early 2000s with the assistance of Orchid Conservation Volunteers. Richard Thomson set up the ANOS Vic Terrestrial Seed Propagation Group in the late 1990s, and in the early 2000s started volunteering at the Herbarium at RBGV Melbourne as the first orchid conservation volunteer, working alongside orchid conservation officers, PhD and Masters candidates. *Ex situ* propagation at the RBGV began in the early 1990s and has always been symbiotic. Techniques were honed and researched, with the isolation of mycorrhizal fungi from orchid tissue and development of symbiotic methods of propagation based on methodologies developed in other laboratories. Richard 'retired' in 2010 after recruiting me to take over his duties.

By the time I joined the RBGV team as an orchid conservation volunteer in early 2008, the symbiotic propagation procedure was well established. Germination of most terrestrial orchids was quite successful, but replating (growing the seedlings under sterile conditions after germination) and deflasking (transferring the seedlings from sterile conditions to the non-sterile pot and potting mix) needed improvement. Extensive work went into determining the right replating medium and care of the seedlings after potting. The refining of techniques has continued over the years both at RBGV Melbourne and the Orchid Conservation Program at the RBGV Cranbourne (and earlier at Horsham).

Orchid Conservation volunteers at RBGV Melbourne were involved in all aspects of orchid culture, from collecting orchid tissue for isolation of the mycorrhizal fungus, isolation of the fungus, collection, cleaning storing and databasing the seed to all facets of propagation, including sub-culturing the fungus, deflasking,

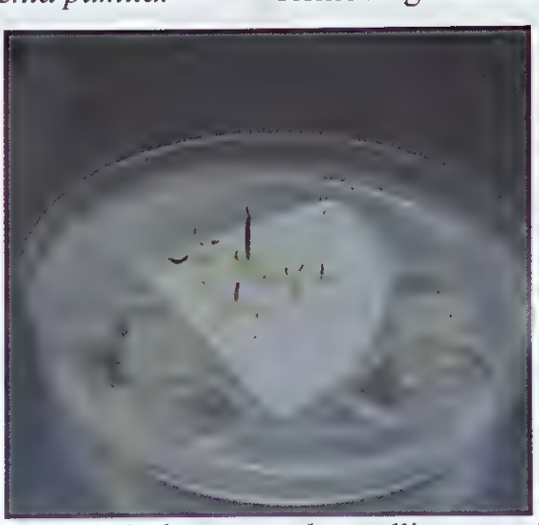
Searches can involve swamps and leeches! Dec. 2010.

Collecting seed for *Caladenia pumila.*



Removing tissue from *Caladenia pumila* (collar slice).

Isolating fungus from *Caladenia pumila.*



Caladenia pumila seedlings germinating on a petrie dish.

Deflasked (potted) *Caladenia pumila* seedlings 28 March 2012.

Close up of *Caladenia pumila* plant ex situ 14th August 2017.

Caladenia villosissima

Caladenia ornata

Diuris leopardina

Caladenia versicolor habitat, Rocklands, Victoria.

and repotting the tubers. In 2014 the Orchid Conservation Program at RBGV Cranbourne was amalgamated with the highly successful program at Horsham DELWP, supported by the Catchment Management Authority (CMA) and Australian Network for Plant Conservation (ANPC), which had been running since 2008, with the CMA and ANPC partnering with RBGV.

Today there are five volunteers in the laboratory at Cranbourne, who volunteer one day a week. They assist with seed cleaning, seed viability/ germination counts, seed sowing, replating, potting, data entry and curation of the nursery collection. Around 50 volunteers also actively assist the orchid conservation program in the field with site maintenance, seed collection, reintroductions, pollinator baiting and surveys. An incomplete tally indicates that well over 5000 plants and more than 40 rare and endangered species have been grown, with over 20 species introduced across three states.

An aspect of the propagation program that I have been closely involved with is the project to propagate *Caladenia pumila* (dwarf spider orchid), which was rediscovered in 2009. It had not been seen for 80 years and was thought to be extinct, until two plants were found in a reserve about 10 km from its original location in south-west Victoria. The two plants were about 1cm apart and critically endangered. A very high priority was to get them delisted as extinct!

My involvement with *C. pumila* began a few days after the rediscovery. The orchids were only 5 km as the crow flies from my home, so it was logical that I became heavily involved in its protection and attempts at propagation. Since 2009 I have been a member of the *C. pumila* Working Group involved in the propagation of *C. pumila* at RBGV Melbourne and protection of the plant *in situ*. Less than two weeks after their rediscovery I was taking a collar slice from one of the plants for isolation of the mycorrhizal fungus. Two and a half hours later I was isolating the fungus from the collar in the lab.

The fungal isolation was successful, and it was identified as part of the *Sebacina vermifera* complex. This was not unexpected as most mycorrhizal fungi that infect spider caladenias are of this complex. The fungus is now referred to as *Serendipita* OUT A.

The flowers were cross pollinated and seed pods formed, and on maturity only one pod contained seed which was collected for propagation. Flowering of the wild plants has been erratic, with two flowers produced in 2009, 2010 and 2014, one in 2012, 2013 and 2015 and none in the other years. Seed has been collected from five seed pods over this time – not much to work with. Unfortunately, although the fungus grew well and was of the right type, it did not germinate the *C. pumila* seed. This may have been due to low seed viability, the fungus being poor at germinating seed (it had been collected late in the season after flowering) or a combination of both factors.

Over the previous 12 months the ANOS Vic Terrestrial Seed Propagation Group had been experimenting with the fungus from the Inverleigh spider orchid, *Caladenia sp. aff. fragrantissima*. This fungus was unusual as it retained its ability to germinate seed after many subcultures (usually the fungus quickly loses the ability to germinate seed) and had been successful in germinating over ten other spider caladenias. The fungus was tried with *C. pumila*, and did germinate the seed, though <1% of the seed germinated. Still, it was better than nothing. While the seed germinated, it did not grow vigorously and suffered losses after replating and transferring to pots. After six years, we finally had a few plants that were approaching the size where we could expect them to flower. In 2017 one plant developed a bud and produced a flower, but unfortunately it did not produce pollen, or had it removed by an insect.

In 2018 four plants developed buds (we were only expecting three to be big enough to flower). The nursery technician in charge of the orchid collection at RBGV Melbourne, Chris Jenek, and I were both going to be away in the month prior to flowering, so the pots were transferred to the Cranbourne Orchid Conservation Nursery where they could be closely monitored. The three largest plants flowered and were cross pollinated. All developed pods and produced seed. In 2018, ten plants had emerged, but

three weaker plants had senesced quite early – possibly dying.

In July 2019 a fungal isolate obtained from one of the smaller plants in cultivation was sown with seed collected from the wild plants. As before, viability of the seed was low (<1%), but some seedlings were produced – the first from fungus isolated from *C. pumila*. Seed from the cultivated plants was sown with this fungus and germinated, but seed viability is still low (<1%). Eight seedlings have been deflasked and more than 20 seedlings have been replated from both wild and cultivated seed, and it is expected that this will increase to over 60 seedlings. In 2019, eleven plants transferred from RBGV Melbourne emerged, some of which had not emerged in the previous year. This is not uncommon with spider caladenias and has been observed before with potted plants and in the field.

In 2019, six plants flowered, were cross pollinated and seed collected. The propagation work for *C. pumila* has now been transferred to the Cranbourne Orchid Conservation Program.

Field Work

ANOS Vic helps with searches for and the monitoring of wild populations for changes in health or numbers and assist in reintroducing threatened orchids into the wild. This includes weed control, laying out planting grids, planting out and watering orchids plus longer term weed control and maintenance of reintroduction plots, including re-caging orchids where the cages have been dislodged or the cage stakes are breaking down.

Prior to 2012 ANOS Vic actively assisted the DEPI and its forerunner the DSE with searches and monitoring of threatened orchids and searching burnt areas to assess the impact of fire on orchid species. A significant portion of this effort was a week of volunteer activity by more than 20 volunteers during early October. Instead of two DEPI officers spending a combined 14 hours a day on searches, ANOS volunteers and DEPI Officers would spend over 120 hours per day searching given areas, covering a much greater area more thoroughly.

I have specifically referred to DEPI and DSE rather than DELWP as the change in name also brought the dismissal of the majority of Biodiversity Officers in the organisation, which greatly reduced the ability DELWP to engage in these activities. The activities did not stop however, as the Orchid Conservation Program at Horsham stepped in, adding searches for potential reintroduction sites, and searches of private land into the mix. Individual DELWP officers liaise with ANOS Vic to carry out searches in specific areas.

A much abbreviated conservation trip to south-west Victoria in 2017 illustrates the activities involved.

The first day concentrated on the Portland area, searching for *Caladenia calcicola* (limestone spider orchid) in the morning, followed by site maintenance at the *C. hastata* (Melblom's spider orchid) site. The second day we moved north, searching potential habitat near Balmoral for *C. formosa* (scarlet spider orchid) in the morning, moving on to Rocklands in the Black Ranges to search for *C. versicolor* (candy spider orchid) in the afternoon. The Balmoral site was orchid rich with over ten species in flower, some in large numbers - an impressive display but unfortunately no *C. formosa* were found. Nevertheless, everyone enjoyed the wonderful display of orchids.

At Rocklands, we were searching for *C. versicolor* at a known site and nearby areas. The previous year there had been a report of *C. audasii* at this locality, which was well outside its usual range. The GPS coordinates of the putative *C. audasii* site had been recorded, so the plants were easily found. The flowers were quite different from those nearby and also quite different to *C. audasii*. The consensus was that they were a hybrid, most likely *C. versicolor* x *C. villosisima*. The maroon tip to the labellum indicates that a green-comb spider orchid is a probable parent.

The trip into the *C. versicolor* location was delayed by magnificent displays of *C. venusta* (eastern white spider orchid) and *C. venusta* x *C. tentaculata* hybrids along the roadside. At the site we found good numbers of the orchid and

were able to extend the known area by several hundred metres. Several other patches of *C. versicolor* were also found. The results of this and previous searches indicates that *C. versicolor* is probably scattered throughout the southern Black Range.

The Spring searches in western Victoria have extended the range of various threatened orchids and surveyed potential reintroduction sites on public and private land. The effect of bushfires on orchid numbers has also been assessed. It appears that the worst outcomes for orchids are when a bushfire is followed by a dry autumn, winter and spring. Under these conditions, numbers are well down and the orchids struggle.

Summer bushfires followed by good rains through autumn, winter and spring present a different picture. One of the most memorable orchid days I have had was in the Mereek State Forest (near Edenhope) in October 2012. The area was burnt in February 2012, followed by good rains in the following seasons. It was a wonderland of orchids with many species in flower – some in the thousands. Unfortunately, poor autumn and spring rains are becoming the norm in south-western Victoria, leading to more frequent bushfires and dry conditions during the following spring, putting added stress on orchid populations.

Conclusion

This account is an indication of the type and breadth of conservation activities that ANOS Victoria undertakes. It is by no means comprehensive and has neglected the more bureaucratic activities such as writing to governmental organizations, usually to complain about damage or destruction of orchid populations, writing grant applications, progress, and final reports for successful applications.

Neil Anderton is involved in terrestrial orchid conservation at the Royal Botanic Gardens Victoria and a key contributor to ANOS Victoria Inc. conservation activities.

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Dendrobium × *nitidum* – An Earlier Name for *Dendrobium* × *gracillimum*

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Abstract
Recent literature studies demonstrate that the combination *Dendrobium* × *nitidum* was made by Jeremiah Colman in 1921. The effect of this discovery is that *D.* × *nitidum* becomes the earlier name for *D.* × *gracillimum*, the name that is commonly used for plants that are believed to be hybrids of *D. speciosum* and *D. gracilicaule*.

Key words: Australia, *Dendrobium*, synonymy, natural hybrid.

The name *Dendrobium* × *gracillimum* has been in common use for hybrids between *D. speciosum* J.E.Sm. and *D. gracilicaule* F.Muell. (Dockrill 1969; Upton 1989, Clements 1989; Adams 2015). Clements (1989) added another component to this hybrid complex by identifying *D. speciosum* var. *nitidum* F.M.Bail. from "Tropical Queensland" as a cross between *D. pedunculatum* (Clemesha) M.A.Clem. & D.L.Jones (i.e. *D. speciosum* var. *pedunculatum* Clemesha) and *D. gracilicaule*, and then raising it to specific status as *Dendrobium* × *nitidum*. Previously such a hybrid had not been recognised as occurring in North Queensland.

Dockrill (1992) treated *D.* × *nitidum* within *D.* × *gracillimum*, as did Adams (2015) by implying that the latter occurred in North Queensland. Conversely (Jones 2006) recognised it as *Thelychiton nitidus* and gave it the moniker "Atherton Cane Orchid". My preference is for the broader concept of *Dendrobium speciosum* and therefore I will treat its hybrids with *D. gracilicaule* as one taxon, which must therefore be called D. × *nitidum* because this name predates *D.* × *gracillimum*.

Dendrobium × *nitidum* (F.M.Bail.) J.Colman, Gard. Chron. s.3, 69: 107, 1921; M.A.Clem. & D.L.Jones, Austral. Orch. Res. 1: 58, 1989 (isonym).
Basionym: *Dendrobium speciosum* J.E.Sm. var. nitidum F.M.Bail., Brisbane Courier 38 (8000): 7, 1 Sep. 1883; Proc. Roy. Soc. Queensl. 1: 10, 1884.
Synonyms: *Thelychiton nitidus* (F.M.Bail.) M.A.Clem. & D.L.Jones, The Orchadian 13, 11: 491, 2002.
Type: Australia, "Tropical Queensland", collector not cited (Holo.: lost?, see notes below). Neotype (designated by M.A.Clem. 1989: 58): Queensland, cult. Bowen Park, Brisbane, 14 September 1894, F.M.Bail. s.n. (Holo.: BRI).
Dendrobium speciosum J.E.Sm. var. *gracillimum* Rupp, Proc. Linn. Soc. New South Wales 54: 550, 1929.
Dendrobium gracillimum (Rupp) Leaney, Orchidol. Zeylanica 1: 73, 1934.
Tropilis gracillima (Rupp) Butzin, Willdenowia 12, 2: 250, 1982; Rauschert, Rep. Sp. Nov. Regni Veg. 94: 470, 1983 (isonym).
Thelychiton gracillimus (Rupp) M.A.Clem. & D.L.Jones, The Orchadian 13, 11: 491, 2002.
Type: New South Wales, Paterson, 1925, leg. J. Tucker, fl. in cult. September 1929, H.M.R. Rupp s.n. (Holo.: NSW).
Dendrobium × *gracilosum* Clemesha, The Orchadian 6, 11: 257, 1981 nom. illeg.
Type: New South Wales, Moleton, NW of Coffs Harbour, September 1978, fl. in cult. September 1980, S.C.Clemesha s.n. (Holo.: NSW).
Distribution: Australia (New South Wales; Queensland).

The typification of *D.*× *nitidum* follows Clements (1989), however the studies made by Clemesha (1981) bear mentioning. Clemesha mentioned that a sheet without collector in BRI annotated by Bailey as *Dendrobium speciosum* var. *nitidum* is likely the type. Clements (1989) chose a specimen cultivated in 1894 as the neotype but this could be a different clone of *D. nitidum*. Also of interest is a sheet in New South Wales labelled "*Dendrobium nitidum* R.D.F. 9/85 Locality (Q) R.D. Fitzgerald's garden Hunter's Hill 9 -1885". Here again one cannot but agree with Clemesha that this plant must have been given by Bailey to Fitzgerald (who cultivated other specimens given to him by Bailey such as *D. stuartii* F.M.Bail.). It is reasonable to assume that the Fitzgerald specimen is from the original plant, and it may be worth making further studies of this plant and the sheet without collector in BRI to try and ascertain a better geographic origin for *D. nitidum*. Clemesha (1981) strongly suspected that *D. speciosum* var. *nitidum* did not come from North Queensland but was rather a

...ed men alone being left at home to keep ... alive till our return from active service ...." He now writes: "I have survived the war, am demobilised, and anxious to take up the threads of the business I relinquished ... Kitchener's Army in 1914." Mr. Mallett's many friends in the horticultural world will be delighted to know that he has passed safely through the terrible times safely, and we trust that he will be soon enabled to "carry on" during their patriotic master's absence, so that he will find plenty of business awaiting him. Such men as Mallett made great sacrifices for their country in the most critical days of the war.

Dendrobium speciosum nitidum. The central specimen in the fine group of Dendrobiums staged by Mr. J. Collier, gardener to Sir Jeremiah Colman, Bart., Gatton Park, Surrey, at the meeting of the Royal Horticultural Society on the 11th inst., was the fine plant of Dendrobium speciosum nitidum, illustrated in Fig. 64. D. speciosum, all the varieties of which are to be found in Queensland, is a very variable species, and those who know only the stout and ornamental form in gardens, and the less showy, taller-growing D. speciosum Hillii, both with their dense spikes of creamy-white flowers with some purple markings on the lip, would scarcely realise that the rarer and more slender-growing Bancroftianum and nitidum are but varieties of D. speciosum. Much as these plants may differ in habit, however, there is no structural botanical feature either in growth or flower to warrant their separation as distinct species. In the case, however, of D. fusiforme (see Fig. 65), which was originally described by F. M. Bailey (*Synopsis of the Queensland Flora*, page 300) as D. speciosum fusiforme, the very different nature of the pseudo-bulbs later decided the author to remove it from D. speciosum and place it as D. fusiforme. In gardens the various forms are easy to cultivate and very free flowering, the cool house being very often found thriving in warm greenhouses where they obtain plenty of air and sunlight conditions which are essential to all the species of this group to ensure the full production of their flowers. The variety nitidum varies in the tint of its flowers from creamy white to cream-sulphur in the mature stage. The plant illustrated was exhibited with other species by Sir Jeremiah Colman. It has been shown several times at the Royal Horticultural Society, and received a Botanical Certificate in 1908 and a Cultural Commendation in 1913.

FIG. 64.—A FINE PLANT OF DENDROBIUM SPECIOSUM NITIDUM.

Food from Back Yards and Gardens at Leyton.—In the densely populated district of Leyton the school authorities appealed to the boys and girls to cultivate their back yards and gardens. A report on the work of the year just ended shows that over 3,000 cultivated their own plots, while more than 2,600 helped on allotments. Potatos, Cabbages, Turnips, Carrots, Parsnips, Radishes, Onions, Cauliflowers, Runner Beans, Beet, Sweet Herbs, Leeks and Sprouts were among the vegetables grown, and large quantities of food were obtained. As a rule the children were well pleased with the results, and are most eager to continue their efforts. One headmaster purchased seeds to the value of £4 3s., and sold them in penny and halfpenny packets. He has already received requests for 1,649 packets for this year. In most of the schools information and advice were freely given, ... have the wood and the children instructed in the method of cultivating peas. A case is reported of a boy aged 13 years, who, during the absence of his father in the Army, cultivated the garden and an allotment, and the produce he grew sufficed for the whole family of seven.

Tenure of Allotments in the London Parks. In reply to an inquiry respecting the tenure of the allotments provided in parks and other spaces under the control of the London County Council, the Parliamentary Secretary to the Board of Agriculture has written as follows: "Dear Sir, In reply to your letter of the 22nd ult. as to the tenure of allotments, I have to say that my reply to the question on the subject in the House of Commons on the 17th ult. referred to land of which the Board of Agriculture and Fisheries have taken possession under the Defence of the Realm Regulations. In providing allotments in the parks and open spaces the London County Council were dealing with land already in their possession and under the special provision in the Defence of the Realm Regulations No. 2 L, enabling them to arrange for the cultivation of the land on their own behalf and at their expense; and the Board do not consider that they are in a position to override the exercise by the County Council of their discretion as to the period for which the land shall continue to be used for allotments. I may add that the decision of the Council to terminate the tenure of the allotments in the parks and open spaces at the end of the present year appears to the Board to be reasonable, as nothing but the stress of war conditions could have justified the use of the parks and open

mislabelled southeast Queensland specimen. If this view is correct, then the North Queensland plant is without name and depending on one's viewpoint could be established as separate nothotaxon at species or variety level.

A final point of interest is that the first illustration of *D.* × *nitidum* (as *D. speciosum* var. *nitidum*) is of the fine specimen grown by Jeremiah Colman. The black and white photograph can be found in *Gardener's Chronicle* (s.3, 65: 155, f.64, 1919, pictured page 513). This plant received a Botanical Certificate in 1910, and two Cultural Commendations, one in 1913, the other in 1921.

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Paul Ormerod has studied and described new species over several decades, particularly from New Guinea.

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Growing *Sarcochilus* in the Sydney Region in a Warming Climate

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Foreword

In September 2019 I penned the thoughts below on ways to cope with Sydney's warming climate, making it appear reasonably easy to keep both sarcs and growers smiling. It seemed, from my own experience, straightforward enough at the time. Then bang, along come ever more difficult growing conditions brought on by drought, heat and fires, and the introduction of onerous water restrictions.

In discussions with experienced growers they stress the need for an independent water supply, generally achieved by the installation of rainwater tanks, together with the more frugal use of the stored water. Watering is by hand using a wand on the hose as it allows sufficient water for each plant's needs rather than the overhead sprinkler system which is indiscriminate and somewhat wasteful. The practice of misting continues in order to cool the orchids and maintain humidity. Any water used by the fine misting nozzles is more than offset by a reduction in the frequency of hand-watering.

There may be no simple solution, but we growers and our orchids are a resilient lot and cooler times will surely follow.

A Warming Climate

Every now and again orchid growers in the Sydney region are caught off-guard by a dramatic change in the weather. In the late 1980s an overnight chill left a trail of destruction right up the eastern seaboard. I recall finding my *Diuris* plants looking like frosted glass statues which thawed out to resume their normal healthy lifestyle, while around them plants with robust pseudobulbs turned to mush. In sharp contrast have been those exceptionally hot, windy summer days with little humidity, where no part of the bush house escapes the desiccating heat. Over the years, growers have learnt to cope with such unpredictable weather events but more recently there has been a subtle shift in weather patterns quite different to the usual ups and downs.

While unexpected weather events will always be with us, *Sarcochilus* growers in the Sydney Region are finding a need to cope with a steady increase in temperatures, mainly in the summer months, but now extending throughout the year, with July 2019 being declared one of the warmest on record. Summer shade is heavier and being applied earlier each year, but a point can be reached where the amount and timing of this extra shade ceases to be of benefit as the reduction in light can seriously reduce flowering. Climate change, it seems, is to blame for the steady temperature increase, and like it or not, we growers must accept that it is here to stay.

Sarcochilus Culture

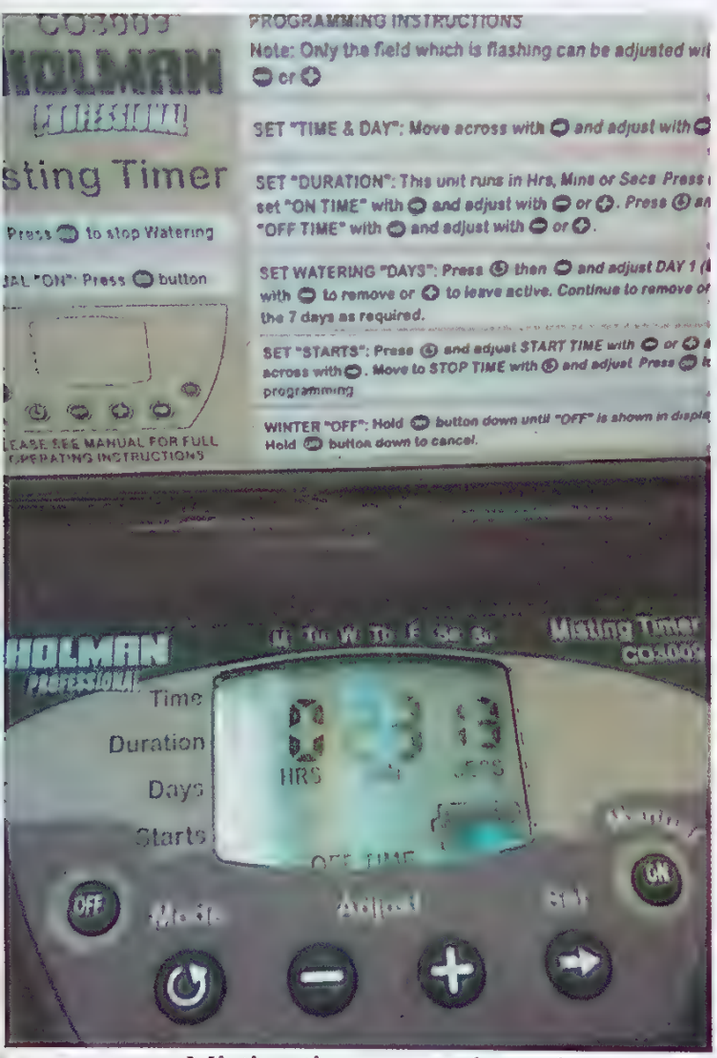
My experience in growing *Sarcochilus* has been confined to the Sydney and Central Coast regions of New South Wales where, along with other growers, I have found *Sarcochilus* culture a most rewarding hobby. Summers in Sydney are accompanied by a natural increase in humidity so, in the past, I found adjustments to shading and maintaining a damp floor, together with fogging on hot days using a Fogg-It nozzle on the end of the hose, was all that was required.

It has gradually become obvious to many Sydney growers that such long-standing methods of *Sarcochilus* culture are no longer coping with the warming effects of climate change, without there being any clear course of action for solving the problem. This all changed for me when Jody Cutajar gave a talk on his experience with misting systems and how effectively they cool and maintain humidity in bush house conditions. Coaxed into action by his enthusiasm I have made changes which have proved very effective, with the added benefit that I don't have to be home on hot days. An explanation of my *Sarcochilus* culture then and now may help other growers cope with climate warming.

In the wild, orchids have adapted over time to a wide range of environments, extending from the Arctic Circle where winter brings a blanket of snow, to the equator where plants either withstand the heat or retreat to cooler mountain heights. The most southerly orchid outpost,

The shadehouse in summer.

Misting timer on the right, sprinkler timer on the left.


PROGRAMMING INSTRUCTIONS
Note: Only the field which is flashing can be adjusted wit
or
SET "TIME & DAY": Move across with and adjust with
SET "DURATION": This unit runs in Hrs, Mins or Secs Press
set "ON TIME" with and adjust with or . Press a
"OFF TIME" with and adjust with or .
SET WATERING "DAYS": Press then and adjust DAY 1 (
with to remove or to leave active. Continue to remove o
the 7 days as required.
SET "STARTS": Press and adjust START TIME with or
across with . Move to STOP TIME with and adjust. Press
programming
WINTER "OFF": Hold button down until "OFF" is shown in displa
Hold button down to cancel.
sting Timer
Press to stop Watering
button
EASE SEE MANUAL FOR FULL
OPERATING INSTRUCTIONS
HOLMAN
Misting Timer
Time
Duration
Days
Starts
HRS
OFF TIME
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OK
Adjust

Misting timer control panel.

Misting in operation

windswept Macquarie Island in the Southern Ocean, surprisingly is home to a *Corybas* species. By comparison, *Sarcochilus* orchids have an easy life in the mountains of the Great Dividing Range along the east coast of Australia, and up to now many Sydney enthusiasts have found it possible to replicate this environment by growing them in a simply constructed shade-house.

Sydney growers usually house their *Sarcochilus* plants in a shadecloth-enclosed structure, with or without a clear weatherproof roof. Wind and sun protection are afforded either by solid walling or extra shadecloth on the south and west walls. Benches made of galvanised weldmesh enhance air circulation and are installed at a convenient height, with a second bench below them if feasible. Most plants will be placed on the normal benching while others prefer to be elevated by being hung overhead or around the walls. Young seedlings and the more shade-loving plants may prefer the cool humidity of the lower bench, provided air circulation is adequate.

Shading

When away from their natural environment plants are usually grown under coloured shade cloth to give sun protection and to keep them cool. Green has usually been favoured but the use of stone coloured shade cloth is now the choice of many growers who regard the stone colour as helpful in maintaining effective shade without excessively reducing light levels. I grow under a clear solid roof for protection from the elements, but otherwise the shade house is a simple pipe-framed structure covered in shadecloth. Permanent shading is provided by 70% green shadecloth on the side walls with an extra layer of 70% on south and west for wind protection. A permanent layer of 50% green lies on top of the roof with an extra layer of 50% green added in summer, the latter being draped over a pipe so that it is clear of the roof.

This amount of roof shading proved inadequate in coping with bright summer days so a curtain of 50% green shade cloth was suspended on wires below the roof and slid to one end when not needed. However, with all shading in place the interior was far too dark, a problem solved by replacing the 50% green curtain with 70% stone shade cloth. Changing this ceiling shadecloth from 50% green to 70% stone two years ago was so effective in letting in light that it is now a permanent fixture.

Watering in hot weather

I prefer to grow *Sarcochilus* under a solid roof as this protects flowers and gives control over wet weather. However, being mindful of watering needs then becomes extra critical as *Sarcochilus* have little capacity to store water. I strive to keep the potting mix slightly moist, without remaining very wet for long periods, or too wet on very hot days when the water around the roots may overheat. Should the plants need watering when a hot day is forecast, I prefer to water thoroughly late the previous afternoon. The plants and potting mix then have a chance to drain while remaining well hydrated. Afternoon watering is particularly effective before hot nights, the plants being cooled overnight by evaporation.

Misting

Epiphytic orchids receive moisture from overnight mists and dews but those grown under a solid roof miss out. I have been in the habit of manually fogging the plants and surrounds most mornings and throughout hot days with a Fogg-It nozzle (the green model gives a fine mist) on the end of the hose. I still do this in the cooler months, but for the rest of the year I now rely on an overhead misting system, thanks to the convincing talk given by Jody Cutajar, who stressed the advantages of regularly misting the orchids in short bursts throughout hot days. Misting systems, of which there are many variations, consist of a series of fine overhead outlets under pressure, controlled by a specifically designed timer. Mine is a readily available DIY misting system, the timer being set to operate throughout the day at intervals of 20 secs on and 20 mins off, varied to suit the seasons and inclement weather. Although the timer controls appear complicated, they are quick and easy to reset.

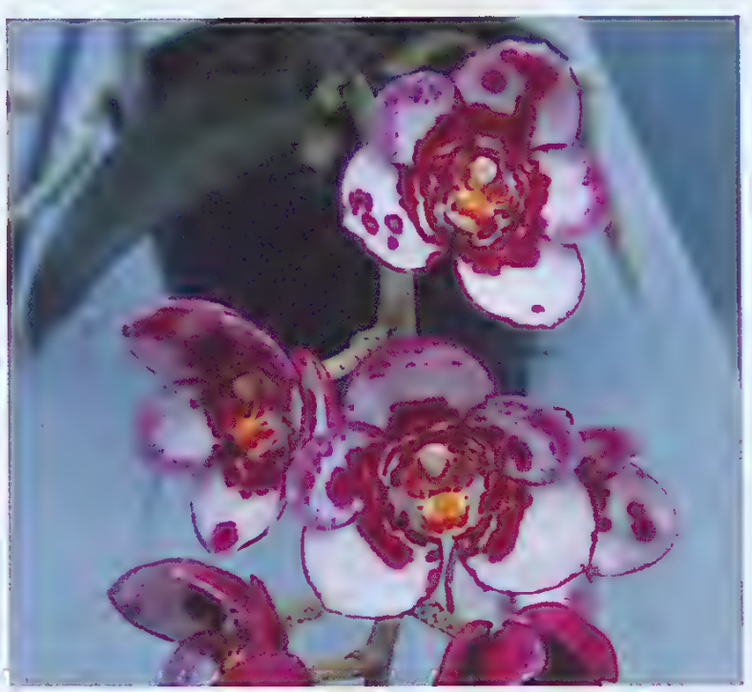
Sprinklers

The overhead sprinklers are entirely separate from the misting system and were installed years ago to water the orchids should I be absent for a period of time. The sprinkler controller can be set to water on selected days, time of day

Sarcochilus seedlings deflasked Jan. 2019 start out on a lower bench (*Den. tetragonum* seedlings in foreground).

Misting and sprinkler piping beneath stone-coloured shade cloth.

Sarcochilus Maria x Allure



Sarcochilus Maria x Allure 'Nice'

and duration. More recently I have found the sprinklers are particularly suited for thoroughly saturating the plants and surrounds in periods of very hot weather, as described under 'watering in hot weather'. For this I simply turn the controller to 'on' for a pre-set duration of twelve minutes, the result being a much more thorough soaking than hand-watering would achieve.

Plant growth

Growth is most active in the cooler months but can be evident all year in ideal conditions. The Sydney grower may notice foliage desiccation during hot, dry December days, but plants quickly respond to January's humidity. Close observation of the plants and ensuring their healthy development throughout the year can be as rewarding for the keen grower as seeing the plants in flower. Within reason the more light received, the better *Sarcochilus* plants flower, especially *Sarcochilus hartmannii* which often grows in full sun in its mountain habitat. It is also quite a hardy species, making it and its hybrids easier to grow and a little less exacting in their cultural requirements. It is a good place for newer growers to start. As confidence develops other species and hybrids, in all their forms and colours, can be introduced without the grower losing heart.

To sum up, each passing year has seen us ride the ups and downs of the weather, so we grow and flower *Sarcochilus* to the best of our ability. Now, in the face of climate change, it seems necessary that we need to adjust our cultural methods to suit a hotter environment. These adjustments will vary with each grower but in my case all it required was a bit of stone-coloured shade cloth, a new misting system and the occasional use of the existing sprinkler system to keep my plants happy and flowering well. So maybe, by explaining my changes, I have helped with ideas allowing you, too, to 'set and forget' in summer, and be inside enjoying the air conditioning.

David Butler is an experienced and successful breeder and grower of Sarcochilus.

Flowering in shadehouse 2018.

ANOS Photography Competition 2019. More than Meets the Eye?

Melissa Young and Callyn Farrell
dunoau@gmail.com

To enable and encourage participation of growers and orchid enthusiasts living interstate or not able to attend in person, a photography competition and display was held as part of the 9thANOS Conference and Show at Strathpine, Queensland in August 2019. This initiative increased the diversity of orchid content on display and proved to be a popular talking point for attendees. Thank you to all who took the time to enter the competition. It was well received by members of the public and orchid enthusiasts alike.

Photography competitions are offered at many annual orchid shows throughout Australia and internationally. They provide individuals with an opportunity to bring their interest of photography into the hobbyist sphere of orchid growing. Many orchid growers are very talented photographers, and we are strong believers that this should be celebrated. By providing a high-profile platform for orchid photography ANOS as an organisation helps raise awareness of conservation issues. In particular, we can showcase photographs of species that for many may otherwise remain unseen or unknown.

Photography competitions are also a fantastic way to improve photographic ability, knowledge of technical aspects and to enrich individual style. While photography just for the sake of photography is a lot of fun, sometimes a competition can help you achieve more as a photographer. The simple fact that you are prepared for your image to be judged and displayed along with other entries is likely to improve your work. When entering images into a photography competition there are some tips to keep in mind. Avoid distracting elements in the images where possible. Distracting elements pop up in the background and foreground, and impact on colour. They can make the difference between a good shot and a fantastic one. If an image isn't perfectly focused, exposed brilliantly or strongly composed – take another one.

The 2019 competition was judged by Melissa Young, an accomplished photographer based in Newcastle, New South Wales. The high-quality entries beautifully illustrated the diversity, quality, and intricacy of Australasian orchids and the habitat in which they exist. Champion photograph was awarded to Jon Cara for *Dendrobium nindii* x *D. discolor*. Interestingly,

Table 1. Results of the photography competition.

Category	*Exhibitor*	*Title*	*Place*
Orchids at a micro scale	S Greaves	*Caladenia septuosa*	First
	S Greaves	*Pheladenia deformis*	Second
	P Fehre	*Caladenia saggicola*	Third
Orchids in natural habitat	S Lawson	*Eria* and *Dendrobium* species, Cape York	First
	J Gresham	*Sarcochilus falcatus*	Second
	J Cara	*Caladenia atroclavia*	Third
Orchids out of context	P Adams	*Sarcochilus australis*	First
	J Gresham	*Cymbidium madidum*	Second
	S Lawson	*Epiphytic Orchids*	Third
Orchids as geometry	P Fehre	*Caladenia caudata*	First
	S Greaves	*Caladenia septuosa*	Second
	J Cara	*Dendrobium bigibbum*	Third
Award style photography	J Cara	*Dendrobium nindii* x *discolor*	First
	C Dennis	*Dendrobium spectabile*	Second
	C Dennis	*Bulbophyllum burfordiense*	Third

Dendrobium nindii x *discolor,* Champion Photograph J. Cara

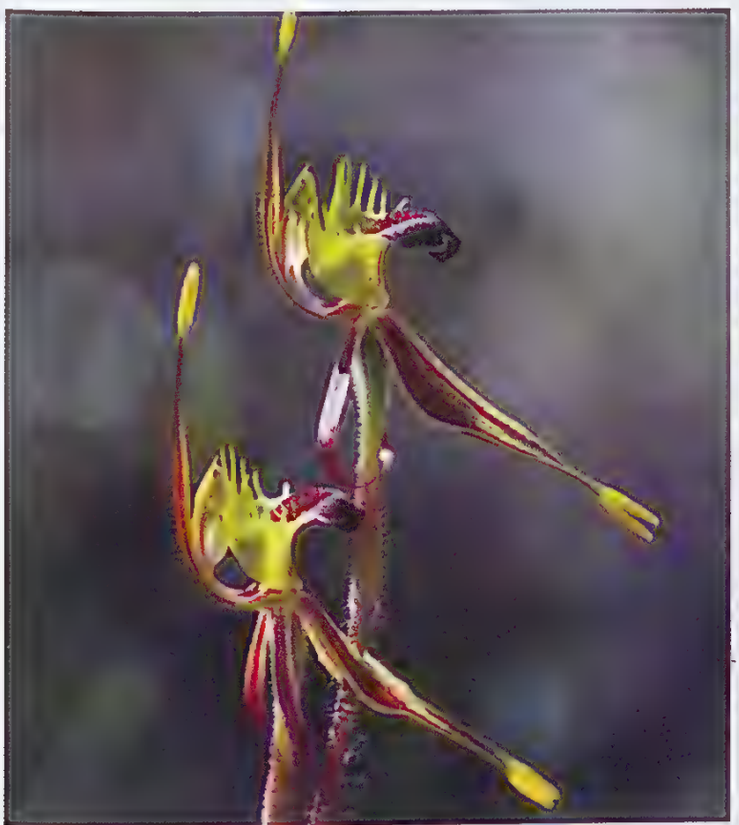
Bulbophyllum burfordiense Photo C. Dennis

Corybas fimbriatus Photo G. Curry

Below: *Sarcochilus australis* above saltwater Photo P. Adams

Pheladenia deformis Photo S. Greaves

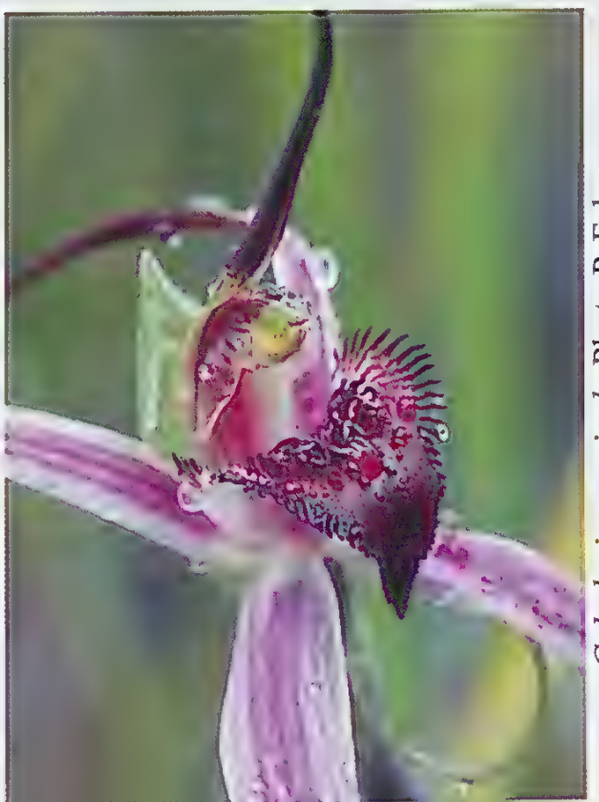
Dendrobium spectabile Photo C. Dennis



Caladenia septuosa Photo S. Greaves

Cymbidium madidum Photo J. Gresham

Caladenia septuosa Photo S. Greaves



Caladenia saggicola Photo P. Fehre

this is a rare natural hybrid was collected from Innisfail, north Queensland and location unknown by John Mewburn in the 1990s.

The categories for the photography competition were:

Orchids at a micro scale – miniature flower(s) or a part of a flower or plant that is usually too small to be seen with the naked eye

Orchids in natural habitat - orchids among the flora, fauna and landscape

Orchids out of context – orchids outside the orchid house, orchid show or usual natural habitat

Orchids as geometry – a celebration of orchid morphology, symmetry, scale and arrangement

Award style photography – plants not necessary award quality

It is very important that entries follow the rules of the competition. Has the photograph been entered correctly, does it meet the criteria, is it printed correctly, and does it comply with the eligibility requirements?

The judging criteria were:

1. Components of the entry:

Impact: what initial impact does the entry have on the judge, before it is viewed critically?

Creativity: how has the entrant conveyed their idea through the lens and therefore in the photograph and how have they interpreted the prescribed style of the class?

Style: was the entrant able to showcase their personal originality and technique to influence how the image is presented and interpreted?

Subject Matter: was the subject matter displayed in the photo appropriate?

2. Technical aspects:

Technique: the approach used to create the image; printing, lighting, posing, capture, presentation.

Composition: how all the visual elements harmoniously express the purpose or intent of the image. Does the photo draw the viewer in to look where the creator intended?

Eria and *Dendrobium* species, Cape York Photo S. Lawson

Theylymitra azurea Photo S. Greaves

Sarcochilus falcatus Photo J. Gresham

Dendrobium glomeratum C. Dennis

Presentation: having a finished look. Was the entry ready to be entered or were some finishing touches still required?

Color Balance: this aspect can bring harmony to a photo. Do the tones work together, effectively supporting the image? However, color balance is not always harmonious and can be used to evoke diverse feelings for effect.

Centre of Interest: the point(s) in the photo where the entrant wants you to view the image. Does the photo draw you in? Does it have more than one center or interest or none at all?

Lighting: how the entrant was able to use and control light. Was the lighting applied in the photo (manmade or natural) properly used to enhance the image?

3. Does the subject matter/content fall within the theme? Is it relevant?
4. Even if the technical requirements have all been met, does the entry create the visual impact that it should?
5. What is the overall impression? What is the effect? Does the entry stand on its own, as complete and outstanding? Does it have the 'wow factor'?
6. Was the entry unpolished?

The competition was very successful, with over 70 entries. Hopefully, publicity from the competition will encourage local groups from all states to include a judged section for orchid-related photography. We consider that this will naturally increase the diversity of show content, inspire more interest and attract potential members. Conservation awareness is raised, while enthusiasts and the public are exposed to a wider range of Australasian orchids without the barrier of distance.

Melissa Young is a photographer from Newcastle, NSW who specialises in nature photography and special events. Callyn Farrell is a hybridist and ANOS judge.

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Kevin Barry Collins OAM 1934 – 2020

Chris Dalrymple and Phil Spence

Barry attended Newington Boys' College Stanmore and remained very active with Newington until he became unwell. He played Rugby Union for Newington in his early years. His parents and his sisters Noelene and Elva became deeply involved with the war home effort, hosting many outings and functions for troops on leave in Australia, including fund-raising for food packs and other items for prisoners of war.

Noelene and Barry were involved with The Royal Australian Horticultural Society, and Barry judged at the Sydney Royal Easter Show for 37 years. Noelene and Barry became legends in the tennis world and united many players of the eastern suburbs into a strong force. His involvement with basketball is again a legend story as he was one of the key persons to unite the game and take it to where it is today. He was deeply involved with Coogee Surf Life Saving Club and a major worker with the Coogee Diggers RSL club. He was also a Justice of Peace and served in this public role for many years.

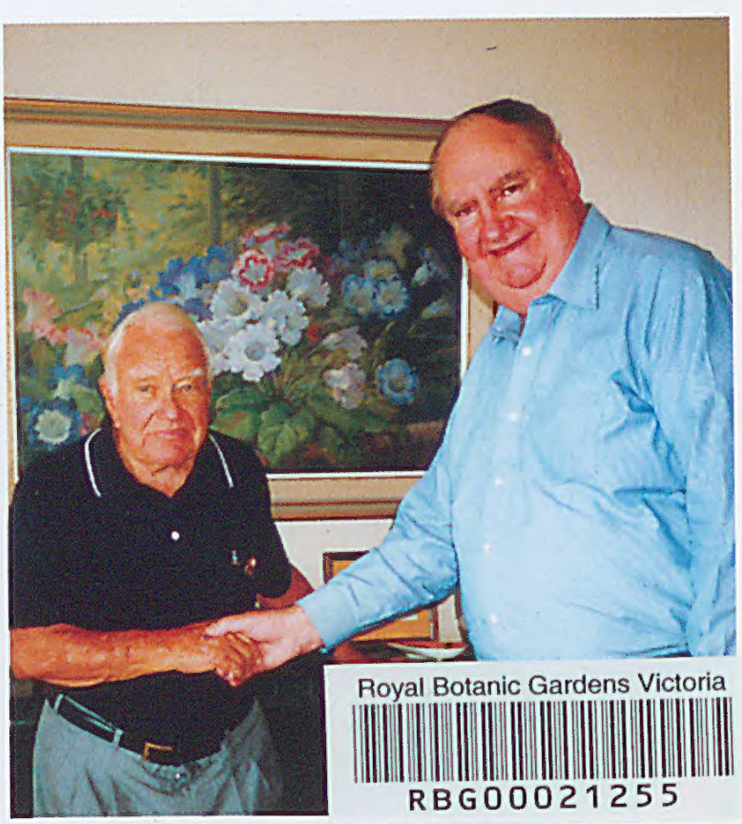
Barry was involved in many different fields and lived his life to the fullest. He was not just a member, but a hard working one. He was a foundation member of ANOS Inc. and served on ANOS council for many years. Barry's love of orchids started early and took him all over the world. Within the Eastern Suburbs Orchid Society, he was a stalwart who kept it going in the lean years, and he turned the club around to an active and vibrant group. He served on the executive and was president for many years. He also served as president of ANOS Warringah and president of the Orchid Society of New South Wales.

An achievement of which he was notably proud was the establishment of the Mingara Orchid Club, to which he gave great support and guidance. He was inaugural president and filled that role for many years. The club has become one of the most successful in Australia. He was at every event, helping wherever needed and always more than willing to share his deep knowledge and passion of his love of orchids. He encouraged new growers at all the clubs that he attended and offered sound guidance. If you ever had a problem, he would steer you in the right direction. At all clubs he was a steward at their exhibitions and shows.

He represented Australia at many world orchid conferences and participated in setting up displays for Australia. In his early years he benched many orchids and won the yearly point score, notably at OSNSW. In 1968 he was on the committee for the World Orchid Conference held at the Domain, Sydney, one of the most successful orchid events in Australia. Barry was awarded many honours including OAM. With his passion for orchids and his propensity for work, he was honoured with life membership of OSNSW, ESOS, ANOS Warringah and Mingara OS.

Barry's love of plants extended past orchids. He was heavily involved with the world of orchid stamps and orchid club badges and had one of the largest collections of badges in Australia.

He had the special gift of taking a club or an organization to another level and has left this world a better place. He remained active throughout his illness, often driving long distances to attend meetings, encouraging members and embracing new club endeavours. He was a great friend to many, including us, and he will be truly missed……and he was an excellent Santa Claus.


Royal Botanic Gardens Victoria
RBG00021255

Barry Collins with Hermon Slade.
Photo Yvonne Spence.

Jim Lykos 1947 – 2019 Gerry Smee

I had the immense pleasure of knowing Jim Lykos as a friend from the early to mid-1990s. We met through our interest in Australian native orchids. He was a student in the second ANOS judging course and became the 16th ANOS judge on 15 July 1989. As a judge Jim had a quiet, thoughtful and confident approach. His highly organised mind and intellect enabled him to communicate the good and not so good features of an exhibit quickly and succinctly. Many panels were given valuable lessons when he talked about orchids as his knowledge was encyclopaedic, especially when it came to his greatest love in the orchid world, terrestrial orchids.

A university graduate, Jim had a thirst for knowledge and his interests were diverse, from classical music to art and literature. He had an immense knowledge and interest in plants, with specific knowledge of *Hippeastrum* and South African bulbs, in particular *Brunsvigia, Cyrtanthus, Clivia, Crinum, Haemanthus* and *Scadoxus.*

Jim was a member of the Australian Camellia Research Society, serving as Vice President under Bob Cherry and succeeding him as President. He did voluntary work at Camden Park Farm, the family home of John and Elizabeth Macarthur, who introduced both Merino sheep and camellias into the colony. Jim was involved in a project to introduce lost camellias back into the garden. He struck many cuttings and made grafts at his home, growing them and introducing them back into Camden Park Farm. Jim had a sizeable and diverse collection of camellias.

He was Registrar of Judges for the New South Wales Regional Panel for five years until illness forced him to step down. As registrar he coordinated the judging course and was on the Ira Butler Committee for three years. In his retirement Jim became a highly skilled potter, making some fantastic pieces which adorned his home and garden.

Our sympathies go out to his wife, Anne, his two children, two step-children and their families.

Shows and Events 2020

April 4th ANOS (Qld) – Kabi Group Inc. 2020 Autumn Show. Venue: Albany Creek Community Centre, 15 Ernie Street, Albany Creek. (Set up April 3)

May 2nd ANOS Newcastle Group Show Venue. Windale / Gateshead Bowling Club , 2A Lake Street, Windale. 2306.

May 9th ANOS Macarthur and District Autumn Show. Venue: Rosemeadow Marketplace, Copperfield Drive, Rosemeadow Benching/ Set Up : 7am Show Times : 9am - 3.30pm

July 2020 25th Annual ANOS Sydney Group Auction. Venue: Federation Pavilion, Castle Hill Showground, Castle Hill, NSW. 8:00am – 1:00pm

August 2020 14th–16th St. Ives Orchid Fair 'The Big One' Venue: St. Ives Showground. Mona Vale Road, St. Ives 9:00 am to 4:00 pm (3:00 PM on Sunday 18 August)

August 27th–29th ANOS Far North Coast (NSW) Group Spring Show. Venue: Ballina Bunnings Store from Thursday 27th to Saturday 29th August 2020 with setup on Wednesday 26th.

August 2020 29th–30th 2nd Annual ANOS Sydney Group Australasian Native Orchid Show 2020 TBA 9:00 am – 5:00 pm

September 5th–6th 19th and Final Kempsey Speciosum Spectacular will be held over the weekend . Benching will begin on Friday 4th and the ANOS Mid North Coast Group meeting will be on Friday night with guest speakers as usual.

September 12th ANOS Illawarra Spring Show Saturday 12th and Sunday 13th September Venue: The Old Courthouse, Cliff Rd Wollongong.

September 12th ANOS Newcastle Group Show Venue: Windale / Gateshead Bowling Club , 2A Lake Street, Windale. 2306.

September 19th–20th 38th Annual ANOS Sydney Spring Native Orchid Show (Sat. 8:30 am–4 pm; Sun. 8:30–3:00 pm) Venue: Kellyville Village (in front of COLES), 92A Wrights Rd Kellyville NSW

Dendrobium Yarrá Quartz 'E Lowe' Photo Peter Adams